# THE AMERICAN ENGINEER

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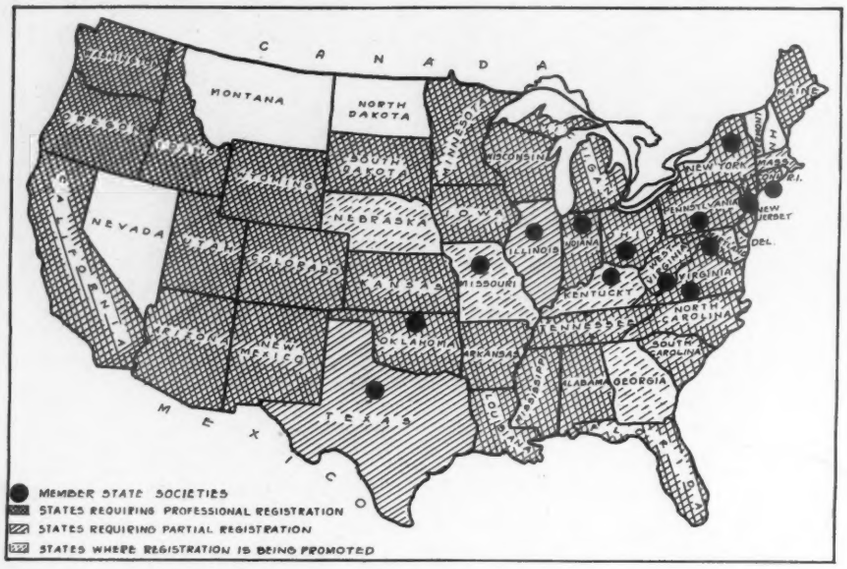


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# THE AMERICAN ENGINEER

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### THE COVER

**Erosion is the subject of this month's issue, and the cover depicts a horrible example. It is illustrative of an article appearing on page 8, by Engineer Harry E. Harris, Chairman on Flood Control and Soil Conservation of the National Society of Professional Engineers**


**The American Engineer assumes no responsibility for statements or opinions expressed by contributors. Their names identify the source of the same.**



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# Current Opinion

## Co-operation Mining Engineering Societies

Extract from an address by James H. Herron, President American Society Mechanical Engineers before the Engineers Club of Philadelphia, January 26, 1937.

"Those of you who have had the opportunity to read Croft's article on "The Engineer and His Societies" I think have found considerable enlightenment. This was published, I think, something over a year ago in Mechanical Engineering. Croft found that the engineers had over a hundred different societies; they had over twenty national societies. Now the question naturally arises: what are you going to do with that diversity of interests?—I am talking technically now.—Are you going to satisfy that diversity of interests technically? Can you do it? Can a unified profession be built upon a technical basis? I believe the answer will have to be—No, it cannot. It must be built upon some basis which is common to all of us. Let us call it a material basis, if you please.

"So we have before us a considerable problem: how shall the engineers cooperate in a national way? I know that I gave a talk in Buffalo about fifteen years ago and I made this statement—that if an engineer had an urge to get into politics, God bless him; he should better politics very considerably. Now we know that these other larger organizations, like the American Medical Association and American Bar Association are both in politics, especially the latter. The fact is we hardly find a politician who isn't a lawyer. Now, must we do that thing? I know that in Buffalo they called me an engineering heretic for suggesting anything of that sort. But I believe we must come to it, sooner or later. That is one of the ways that we can circumvent the politicians' dominance of situations that are strictly engineering."

So we have got to find our place in the sun, and we've got to establish it. It may come through registration, or licensing of engineers, as some of our committees are more inclined to call it, because licensing is the only thing that gives us legal status.

Now, I might cite you a little thing that we had in Cleveland. We had a Charter Commission up before the electorate, the question arose who would be on that Charter Commission; and the Civic League provided its slate—with no engineer on the slate. We went to them and they said, "No, we don't think you are necessary." So we got out our own petitions for three engineers. Got about five thousand signatures on those nomination petitions, and when it came to election, notwithstanding they were not on the Civic League slate we elected all three engineers.

I should like to see, personally, one national society, called the American Society. We have had a number of organizations grow up and their code of ethics deal entirely with the material advantages to the engineer. We have the American Association of Engineers, which dealt originally with the material benefits which would accrue to the engineer by membership in that organization. They did, I am sorry to say, lose sight for a while of their technical responsibilities. We have the National Society of Professional Engineers. That has extended out into the different states. We have a strong Ohio Society of Professional Engineers; you have one in Pennsylvania but how strong, I don't know. However, they seem to be beating us—I mean the profession as a whole—beating us to the accomplishment of some good for the common member of these societies, and I think that we can take a lesson from their book.

## Engineers Score Highway Policies

### *Diversion of State Motor Tax to Other Purposes Assailed by Bixby at Session*

Nearly 1,000 officials of the highway departments of eleven States and the District of Columbia and engineers engaged in the construction of roads attended the opening yesterday of the thirteenth annual convention of the Association of Highway Officials in the Hotel Pennsylvania.

Present-day roads and methods of maintenance, construction and improvement were condemned by speakers at the meetings yesterday. The practice of several States of diverting motor taxes from road building to other departments was particularly criticized by *James S. Bixby,* district engineer of the New York State Department of Public Works, *retiring president of the association.*

"Eventually public opinion is sure to correct this condition," he said. "Maine, Minnesota, Missouri, Colorado and Kansas already have State constitutional amendments confining motor vehicle taxation to highway improvement. In New York State for 1937, introduced legislation indicates that diversion of tax receipts is still in the same proportion as in former years.

"The highway department is allotted but $10,000,000 for maintenance work and $29,000,000 for reconstruction from all sources, including Federal aid. There is an estimated motor vehicle revenue of $96,000,000 for the year."

Mr. Bixley also pointed out that the increase of 4 per cent in fatalities in 1936 was less than had been expected. He based his figures on the increase in traffic, and said consumption of gasoline had increased 9 per cent. Connecticut, Maine, New Hampshire, New York, New Jersey and the District of Columbia showed a decline in fatalities.

Dr. Miller McClintock of the Bureau of Street Traffic Research at Harvard University made recommendations for the perfect highway of the future. He said it must be of the "limited" type, referring to the limitation of entrances and egresses, which should be carefully spaced, depending on the needs of communities served.

He placed accident causes in three classifications—those resulting from medial friction, including head-on and mid-road collisions; marginal, those occurring from curb congestion and double parking, and those caused by improper swerving in transit.

"There is nothing about the present street system that is not wrong for handling motor traffic," he said.

Colonel Frederick Stuart Greene, State Superintendent of Public Works, welcomed the visitors. He said there would be "no such thing as safety on our highways so long as we continue to license the crackpots we have driving automobiles."

At a special meeting of the board of directors H. H. Temple, chief engineer of the Pennsylvania Highway Department, was elected president; Francis J. Whalen of the Connecticut Highway Department, vice-president, and A. Lee Grover of the New Jersey Highways Section was re-elected secretary and treasurer.

*—From New York Times, Feb. 25, 1937.*

# EDITORIAL . . .

## *Soil Conservation*

We believe President Roosevelt is "Engineer minded."

Each successive national pronouncement is of a political, social or economic program, based on one or more phases of engineering, to be carried out by the members of the engineering profession.

Is it possible that when late in 1936 the President suggested that Engineers should be more social minded, that thought was the corollary of his own social self being engineer minded?

W.P.A., P.W.A., National Resources Committee Report on Public Works Planning, Flood Control—and now Soil Conservation—all dependent upon engineering planning and execution.

Is it possible that in this fast moving social order, most of our progress and happiness depends upon engineering?

A national soil conservation program with uniform laws in each of the forty-eight states. "The Nation that destroys its soil destroys itself" warns Mr. Roosevelt.

Soil conservation is placed under the broad supervision of the Department of Agriculture where it belongs.

The problem requires the joint endeavor of "agronomists, foresters, soil specialists, botanists, economists, engineers, animal husbandmen and sociologists alike" (Soil Erosion and Its Control—Ayers).

In the erosion control program the Engineer studies rainfall, run-off, channel capacity, contours, grades, quantity and cost estimates, dam design and supervision of construction. Just some of the necessary steps, but the Engineer is a team player and works along cooperating with the others.

Engineers will cooperate to the fullest in a soil erosion prevention program, based on cooperative action by the several states.

Let the Agricultural Engineer come into his own!

OLIVER EVANS
(1755—1819)

## *We Present This Month*

# Pennsylvania's First Mechanical Engineer

*Oliver Evans, was born at Newport, New Castle County, Delaware, September 13, 1755. His death occurred in New York City, April 15, 1819.*

After attending country schools until he was fourteen, Evans apprenticed himself to a wagon-maker where his mechanical ability was recognized. He spent his leisure time in studying mathematics and mechanics. About the time he reached his majority he perfected a machine for carding wool. He applied to the Pennsylvania legislature for funds with which to introduce the machinery, but was refused. In 1780 he began work on a series of improvements in flour-mill machinery which performed every necessary movement without the aid of manual labor.

During these years he was experimenting with steam engines and had settled in Philadelphia where he started in business as a regular engine builder, specializing in high pressure engines, which were then looked upon as the height of folly. He was probably the first man in the United States to make a specialty of this work. In 1804 he constructed a steam dredge for use in the Schuylkill River and in 1807 established the Mars Iron Works and by 1819 fifty steam engines which he had built were in use throughout the United States. Just before his death (in 1819) his last great work was the designing and constructing of the engine and boilers for the Fairmount Waterworks of Philadelphia.

If Evans had received the patronage and assistance such as Fulton received, the steamboat and steam carriage might have been in operation much earlier. His contributions to manufacturing processes and to steam engineering stamp him as one of the most profound and practical thinkers in this field. He was the friend and consulting engineer of some of the leading men of his day, including Washington and Jefferson.

### OLIVER EVANS' PHILOSOPHY

. . . *"When we see a man, one of the first ideas that strikes our minds is, that he can know but little more than ourselves.*

. . . *"When we read of a man in some distant country who has made some useful discovery either in art or science, we give more credit to what we hear than we would if we had seen him.*

. . . *"But when we read of a man who lived centuries ago and who had laid down theories and rules as fundamental in the sciences, we can place implicit faith in them if we do not plainly see an absurdity in them, for we do not know but that he was more than human.*

. . . *"Therefore he that studies and writes on the improvements of the arts and sciences labors to benefit generations yet unborn, for it is not probable that his contemporaries will pay any attention to him, especially those of his relations, friends and intimates; therefore improvements progress so slowly."*

# Floods and Soil Conservation

*By* **H. H. BENNETT**

***Chief, United States Department of Agriculture Soil Conservation Service***

**H. H. BENNETT**
**Chief of the Soil Conservation Service**

Floods have once again captured the attention of the nation. The recent deluge in the Ohio Valley has brought to the surface all the wrangling, all the difference of opinion that has revolved about this problem for several decades. In the past, some have argued that floods could be controlled only by downstream engineering structures, by dams, dykes and levees placed at strategic points in the lower valleys of all our larger rivers. Others pleaded for extensive reforestation of watersheds, pointing to the effectiveness of forest cover in controlling runoff. A third group advocated upstream engineering measures and agricultural practices designed to hold precipitation where it falls on fields and pastures. And finally there are a large number of Americans who remain indifferent or who regard floods as an absolutely unavoidable calamity of nature. This seems an appropriate moment to separate the facts from the false assumptions and to formulate from this confusing welter of theories a sound and well integrated attitude toward the problem of flood control.

The advocates of passive resistance—those who would do nothing—point to the undeniable fact that floods are caused by an excess of rainfall and argue that they represent an inevitable cataclysm of nature. Stressing the futility of man's effort to cope with angry nature, these apostles of defeatism declare that we are utterly defenseless against her occasional furious onslaughts. All we can do in such cases is to pick up the pieces after the disaster and patch them together as best we can. We always have had floods in North America, they say despairingly, and we always will.

Such an attitude, it seems to me, is based on an incomplete knowledge of the facts. It is perfectly true that floods occurred in this land before the arrival of the pilgrims at Plymouth. In the 16th century, Hernando De Soto found one in his explorations of the lower Mississippi Valley. Examination of the soil stratification in various other watersheds indicates that they have been occurring more or less periodically for hundreds of years. But this soil composition also reveals another highly significant fact. These early inundations were not floods as we know them today. A stream gently overflowed its banks and spread slowly over adjoining fields and meadows. There was no rushing, tearing torrent similar to

**Silt in Orchard, February 24, 1936**

that which recently uprooted the whole Ohio Valley. At present, the flood problems seems to be growing more acute with every passing year. Perhaps if we understand what has caused this change, if we can see clearly the factors underlying the intensification of floods, we may be able to "do something about it." An ounce of prevention would certainly be worth several tons of cure.

When European settlers first came to this continent they found a land overgrown with thick, lush vegetation. Rain fell on the land and was held back by billions of stems and stalks, absorbed by the spongy topsoil and the litter of plants. Much of it penetrated down to huge underground reservoirs or was drunk up by the thirsty roots of grasses and trees. Ordinarily, the excess ran off and concentrated slowly in stream channels. Even after the heaviest rains the rivers overflowed their banks only on rare occasions. In those days, a flood was an interesting phenomenon of nature rather than a ruthless destroyer of life and property.

In the past three hundred years, however, man has wrought tremendous changes in the face of this continent in his efforts to build a civilization. Many of these changes have increased our comfort and pleasure; some of them have been impressive and even beautiful. But sometimes they have been made carelessly, with little thought of consequences. Some of the most harmful have resulted from the efforts to grow crops and produce food. The American farmer may not have cleared too much land for the plow, but too often he has cleared it thoughtlessly. He has planted clean-tilled crops on steep slopes. Sometimes he has created a whole series of channels down the side of a hill by laying out his crop rows parallel to the slope. Often the axe has been used with a heavy hand. Excessive deforestation and careless burning of undergrowth has left bare many areas that once were protected from soil erosion by trees and ground litter. Land that is fit only for grazing has been converted into wheat and cornfields. Pastures have been grazed without restriction and their sod thinned out to the vanishing point. All of these practices have quickened the run-off of rainfall. Water now rushes down steep, bare hillsides where once it trickled through heavy grasses and forest litter or soaked up by the soil. Sloping fields which have been washed slick and smooth by soil erosion offer perfect runways for the escaping precipitation. The exposed subsoil, hard and stony, absorbs practically no moisture.

**Kansas-sheet erosion on field disced up and down the slope. Taken near Guide Rock, Nebraska on the Kansas-Nebraska line.**

**Oklahoma—water standing in lister furrows on contour four hours after approximately 7-inch rain.**

Huge gullies running down the side of a slope concentrate the rainfall and conduct it swiftly off the land. Roadside ditches and artificial drainageways unceasingly pour in their contribution. In short, millions of gallons more water is now feeding into our river systems, large and small, at increasingly faster rates.

The natural drainage system of our country, the branching network of stream and river channels carved out by nature, is in no position to take care of this increased burden. Silt and erosion debris washed down from upstream fields and pastures has piled up in these channels, reducing their carrying capacity and raising the river crests, both normal and flood. As a result, we are building our levees higher and higher, our dams larger and larger. Yet the angry waters spill over the tops of these structures and submerge our farms and homes. Man is largely responsible for our predicament. By the same token, it lies within his power to effect a cure. With losses running up into hundreds of millions of dollars every year, this problem surely warrants a many-sided attack, a coordinated effort to wipe it out root and branch.

It seems to me both futile and short-sighted to rely entirely on either downstream engineering, on reforestation, or soil and water conservation for a defense against the flood hazard. Any one of these methods of approach, taken alone, simply will not do the job. But by using them conjunctively, in mutual supplementation, we can in my opinion, evidentally harness our flood crests and bring them under almost complete control. Let us consider just how closely interrelated are these three basic modes of defense against floods.

As matters now stand, we probably could not bring back the virgin conditions of this country even if it were desirable. Civilization has progressed too far for such a retrogression. We must be prepared for heavy stream loads in our trunk channels regardless of what other efforts we may make to cut down flood damages. Dykes, dams, and levees in the lower reaches of our watersheds are vitally necessary to hold flood peaks in check when they do arise. But trying to protect our farms and homes, our lives and property from flood dangers solely by downstream engineering structures would be both a costly and a risky process. As the experience of the past few years has vividly shown, flood crests can overtop these structures regardless of how high and strong we make them. When the river really goes on a rampage, every able-bodied man is pressed into service piling up bags of sand, bales of cotton and truckloads of gravel on top of even our highest flood walls. And sometimes the waterbursts through in spite of all these precautions.

*(Continued from page 13)*

# Training and Registration

## *The Problem of Engineers is Qualification*

**Comprehensive Examinations for Right to Practice Will Automatically Raise Standards of Schools Accrediting by E.C.P.D. of Doubtful Value**

**By INGENIEUR**

THE training of engineers has for a number of years seriously occupied the attention of educators and societies devoted to advancing the art of engineering. Probably the most interested body has been the Society for the Promotion of Engineering Education. This organization has within the last few years become identified with the group known as the Engineers' Council for Professional Development.

Recently E.C.P.D. has undertaken to accredit engineering schools throughout the country. A list of approved institutions for part of the Eastern Section has already been made public. As might well be expected there are some schools whose requirements, equipment or facilities do not meet the standards deemed proper by the committee entrusted with the task. As might also be expected, certain institutions not approved are critical of the recommendations of the said committee, in fact are ready to take issue with E.C.P.D. The said issue will be of no great concern unless an atempt is made to have legal sanction given to the approvals recommended. However, it seems that thought is being given to the matter to the extent that legislation prohibiting recognition on any basis other than official state investigation and approval has been considered in at least one instance.

It is the duty of engineers as citizens to consider the problems of the profession in the light of the public welfare. A profession exists as such, not for any institution, be it school or membership association, but for society which it must serve if it is to survive. "Service above self" signifies not alone a Rotary precept but the essence of every professional activity. To accomplish this purpose a profession must constantly consider the means to its own salvation. There necessarily must arise differences of opinion over the path of approach. It is with such matters that the National Society of Professional Engineers is primarily concerned and the writer believes that when and if accomplished, the accrediting of schools by private agencies will have little public effect so long as registration or license laws stand between the student and the practitioner of a profession.

The task of effecting uniform curricula or of accrediting institutions of learning by private agencies is admittedly one of great magnitude but of questionable value. Supposing, for the sake of argument, that the said task could be accomplished, what would be its import? Surely no one to-day believes that the State will accept credentials resulting from pursuance or a course as sufficient for the adequate protection of the life, health and property of its citizens. There remains the public agency established by the people for the purpose of qualifying aspirants for the right to practice the Profession. The significance and responsibility of this agency will increase with time. It, and it alone, will establish the criteria for entrance to practice, and it will do so in accordance with the purpose of its existence.

It is from the problems of society that a public agency entrusted with the task of qualifying persons for professional practice must secure the material with which to establish criteria and examine candidates. The curricula of schools have no place in formulating professional examinations. They are intended to train students with a view to passing such examinations. To reason otherwise is to suggest that the licensing examination is merely a review of texts. The experiences and knowledge of distinguished designers and builders of the world's famous bridges, tunnels, dams, power plants and skyscrapers together with those mechanical, electrical, chemical and industrial engineers of recognized accomplishment are outside and beyond the classroom.

Compare the problem of E.C.P.D., viz. reconciling the curricula of several hundred institutions of learning with that of effecting reasonably uniform professional qualifications through such a medium as N.S.P.E. Does not common sense suggest that the program of E.C.P.D. is illogical. Is it not placing the cart before the horse? It is the end, not the means, that both society and the profession are concerned with. Furthermore, who can with assurance assert that better progress can be effected and better results obtained by making all avenues of approach identical.

As previously noted, already one hears criticism of the decision of the committee attempting to accredit schools. Certain institutions omitted from the list have been for years, and still are, approved by the public agencies having authority and jurisdiction. Of what practical value is the approval of a school by a private agency if the state refuses to recognize the same, or the import of the disapproval of an institution accepted by the state. Above all what is the position of the private agency if candidates from disapproved sources should demonstrate superior talents or qualifications under the prescribed legal procedure. It seems to the writer that the important consideration for the Engineering profession is the establishment of reasonably uniform and severe but fair standards by Examining Boards. The adoption of uniform and adequate curricula will be effected far more readily by such procedure than by the program suggested by E.C.P.D. What human reaction is more natural or more prompt than self preservation. What institution will long prevail if it fails to raise its requirements to meet the purpose of its courses. A controversy that will inevitably arise over the question of accrediting schools can be avoided if engineers will concentrate on legal requirements and qualifying examinations and leave the schools free to work out their own salvation. The public will be better protected, the profession established on a higher plane and the college of engineering raised to university status if the right to practice is predicated upon the ability of every candidate to demonstrate before a duly constituted public agency a character, a culture, a professional knowledge and a talent that sets him apart from his fellows.

*(Continued on page 11)*

# The United States

## *Shall We Allow or Prevent Its Devastation*

**By HARRY E. HARRIS**

*President Connecticut Society of Professional Engineers, Inc.*
*Chairman on Flood Control and Soil Conservation*
*of the National Society of Professional Engineers*

Lack of proper water control now constitutes a menace which permits erosion and floods in the United States. These can and must now be checked by unified engineering control affecting all source waters in order to arrest not merely the tremendous loss of life and property, but the actual imminent destruction of our land and civilization by their inevitable effects.

### Floods and Land Destruction

Floods have taken their toll of life and property all over the world, and although localized flood prevention measures have to a degree improved conditions in certain sections, as yet no ruler, no governing body, no authorized group has attacked the problem in its entity. Levees have been built in the lower reaches of the river, dams have been placed here and there, revetments and dikes have been put in as replacements of washed out banks, nevertheless, the floods still recur at increased heights. We should long ago have ceased sporadic efforts at so-called flood control and substituted a broad gauge, coordinated effort of comprehensive water control under unified and intelligent direction.

Loss of life and property, appalling and terrific at the height of the flood, arouse us. However, damaged property can be replaced and in view of our automobile traffic toll and wholesale killings in Europe, apparently a few human lives are only of passing value. Far more serious to the interests of our nation and the future of the American people is the fact that the same element, uncontrolled water, that causes these floods is also rapidly and permanently destroying and gutting our country. It is variously calculated that if a concerted comprehensive program of water and erosion control from the time the rain drops fall until they evaporate or reach the sea is not adopted and put into effect during the next twenty to thirty years, this country within fifty, or seventy-five years will be in the class with the dead lands such as those of China, where a destroying civilization has brought about its own deterioration and destruction. Last May thirty million Chinese were starving or eating dogs, cats and rats and practising cannibalism, or dying from deficiency diseases in the Szechuan Province due to floods, denudation, erosion and the resultant famines in the last sixteen years. A recent survey of the United States Soil Conservation Service showed that in our United States an area twenty-three times the size of New York State is completely or partially ruined as far as practical uses are concerned.

### Failure of Past Flood Control Measures

Throughout the history of the human race, mankind has suffered from floods and in his funny localized way has fought to prevent them. Damming the flow, raising the river banks, straightening channels, constructing levees, dikes and revetments have been procedures adopted, yet the floods rise higher, overflow and devastate. Dams and bridges get washed out, river bottoms and reservoirs fill with silt raising their levels, levees and dikes give way, revetments are torn away, and the height of flood levels increase. Millions are lost, human lives are sacrificed and yet we go out spending more millions in the same old way without any real attempt to attack the disease at its source. It is like trying to cure a belly-ache by plaster or poultices instead of by corrective medicine and diet. We should at least be able to learn something from nearly two hundred years' experience.

It is not sensible to consider the flood height at freshet stage the only thing to combat. That is like trying to turn back a solid mobilization of a massed army. The logical place and time to attack and check is while the members and units of the army are still scattered and unorganized, before they can concentrate, thus reducing the force of the main army to a controllable power. Likewise, by upstream engineering methods and projects, by retaining the water in the upper levels where it is needed, flood heights may be kept down within controllable ranges. This is obviously better than merely trying to check the periodical damage that concentrated flood waters can do in the lower reaches.

For over a century localized, counteractive, protective measures of Flood Control on the Mississippi River have been taken and millions of dollars spent, and much of it wasted due to the lack of a comprehensive study being applied to the situation which demands extensive coordinated action over the whole of the river's drainage area. The losses due to soil erosion in its watershed were at least twenty times greater than the losses caused by its floods.

What a fallacy it is for Lilliputian mankind to try to fight Old Man River at his strongest and most boisterous front when he is fully armed, instead of conquering him as a Gulliver was captured by tying him down hair by hair, thread by thread, when he was at rest! How senseless it is not to reduce his unruly strength in the upstream waters of the entire Mississippi-Missouri drainage area including all the minor and major tributaries by soil conserving, water retaining projects which will also restore values to drought stricken lands and provide for abundant life.

The causes of more frequent and higher floods should be fully considered as basic in the problem.

The projects for improvement of navigation and flood protection on the Mississippi are huge, but when considered from the aspects of continental hydrology and economy, most of the efforts thus far appear as bungling makeshifts.

### Water Control vs. Flood Control

Water, one of the most destructive elements to life and property, is also one of the most precious and useful resources when under control. What else is there that can sustain life in the Sahara, the dead lands of China and elsewhere, and even in the wide drought districts in our own country that are now waterless? The water table, the height of water in our subsoil. is being lowered in many parts of the country, in some places by as much as ten to

thirty feet. Even the earthworms cannot live in dry and depleted land, vegetation has died, dust storms from the West have carried out over the Atlantic Seaboard and our land is being surely and rapidly gutted.

Why? Because in the advance of our civilization, we, the human inhabitants of this country, have gone over it like a swarm of locusts or grasshoppers through the harvest field, eating and destroying everything in our path and leaving desolation in our wake. When one farm was played out, we moved on to new and fertile fields; when one forest was cut down, we moved on and denuded two more; we drained the swamps, built road ditches to accelerate the run-off of water, burnt over the land and opened the soil for leaching and erosion by our unscientific and wasteful farming methods. We have cut down and burnt our forests without replanting. When our eastern farms became unproductive and unprofitable, we tore up virgin soils farther west by machinery on a large scale with no thought except for immediate profit. In short, we have scalped the land by deforestation, overcultivation, over-grazing, poor agricultural methods, fire, neglect, and man-made deleterious projects, and allowed erosion to carry on its depletion and increase the run-off and further lower the water table throughout the year and raise the flood levels at freshet times.

Look out of your train window in any part of the country where cuts have been made through small hills to provide a level right of way. The banks, with the topsoil removed are filled with gullies which channel streams of water cutting down the surface and carrying down the loosened earth at each rain. This is a familiar example of how erosion is destroying and is carrying off the virility and the fertility of the soil all over the country.

### Water Our Enemy or Friend

Water, upon which the sustenance of all life, animal and vegetable, is based, is also its insidious destroyer when aided by a civilization which is responsible for the undermining and destruction of nature's most valuable gifts to men. Without control it washes down millions of tons of silt and topsoil that nature took hundreds and thousands of years to form, depositing them in river beds or carrying them on into the sea, leaving behind devastated, eroded, unfertile areas.

Man has ruthlessly assisted by cutting down the forests and denuding the surface of the ground by unscientific tillage and by draining swamps and straightening and deepening run-off ditches and gullies. Thus the rain falling on the earth, instead of being retained by spongy masses of tree, bush and grass roots, low hollows, swampy places, crooked brooks, terraced farm fields, ponds and so forth, maintaining a high water table and moisture throughout the season, strikes the unprotected loose earth, starts innumerable gullies, drains silt and water at a rapid rate to road-side ditches, leading to larger streams, and with right weather conditions, all converge in the larger streams to cause devastating flood conditions, wrecking life and property along the lower reaches.

It is not the rain that falls in the locality of the river that is the menace; it is the widespread rainfall over the entire watershed, running off and converging and rushing on to the sea that produces the flood. Therefore, building of dams for huge power and storage reservoirs and straightening and deepening the main lower channels and protecting with dikes and levees may give some protection against higher water in the lower reaches, but does nothing to prevent flood formation from excessive run-off water that should be retained in the higher levels.

### Different Elements of Water Control Cannot Be Separated

All the elements of water regulation and usage are so interwoven and interrelated that they must be brought under a unified control. Drainage basins from the river mouth to the extreme sources of all its tributary streams must be developed from an integrated basis that includes all aspects and phases of the use and control of water. No single element should be considered alone because they are all too closely interlocked.

Some of the various factors of water control roughly in the order of their importance are erosion, vegetal cover, moisture retention, water table, water supply, sanitation, floods, water power, pollution, mosquito control, reclamation, reforestation, agriculture, food fish, recreation and manufacturing. Erosion results in rapid run-off and less moisture retention, resulting in a lower water table and a depleted water supply in the seasons of slight rainfall, evidenced by dry brooks, springs and wells and low reservoirs. Insufficient water adversely affects sanitary conditions. Impounded waters in ponds and reservoirs breed mosquitos. Pollution seeping into water supply causes disease and kills food fish. Stored water must be controlled so as not to aggravate floods above the dams or cause damage downstream. Spare water power can be used to pump water back to the upland country. Navigation for national defense, commerce or pleasure should be maintained in coordination with other protective controls. This gives an idea of how the various elements intermesh. Poor agricultural methods have been a potent factor in causing erosion.

In times of freshet, impounded waters above dams in a river system should systematically be released under a single control at the right times and the levels back of the dams lowered before the flood stage arrives.

Methods that have been developed and tried out in successful usage on a fairly large scale for catching silt and keeping it from being washed away to fill in rivers and reservoirs or being carried out to sea, are an essential part of the program.

The more the subject and its separate factors are studied from an engineering point of view, (which is the only way it should be studied as it is the largest engineering project of all history), the prime necessity becomes more evident that it must be handled scientifically, systematically and comprehensively by a unified engineering control on a coordinated basis for planning, development, maintenance and operation.

### Turning the Earth Upside Down

We think of erosion as eating off and carrying away the earth's surface by water. However, whatever insolubles are eroded and washed off must be also deposited somewhere in the shape of silt. Continued erosion and the resultant silting are actually turning the land down side up in many places. Topsoil that was carried from the upper forests down to the river valleys over the ages while the gentle natural, precivilization processes produced new topsoil faster than it was washed away, deposited light successive layers of topsoil in the river valleys storing up natural fertility. Hence our rich productive Connecticut and other river valleys.

However, with the advance of civilization which introduced the destructive forces of denuded forests, improved mountain roads with deep and steep run-off ditches, improper upland farming methods and all the rest, heavy particles of infertile sand, clay and rock are now carried down by the heavier run-off from the scalped uplands, and the fertility of the valleys is being progressively

*(Continued on page 13)*

# Open Forum

Dear Editor:

In the January issue of your magazine, a very excellent one in the opinion of my father, Charles S. Davis, a consulting engineer, (please forgive me if I do not concur, the New Yorker and Vogue being more to my taste) there appeared a clever poem entitled "The Engineer." We both enjoyed it very much.

As a matter of fact, I thought its nonsense so good that I showed it to the gentleman whose secretary I am, who must for obvious reasons remain anonymous. Being somewhat of a wit, he immediately composed two stanzas of his own to add to it for the benefit of two men who work for him in the capacity of boiler inspector and safety engineer for an insurance company.

Now, of course, I don't know how other engineers feel about boiler inspectors and safety engineers. They may feel that the work of a boiler inspector and a safety engineer does not compare with that of a consulting engineer or a mechanical engineer, etc. And they may be right. I know how angry it makes my father to hear the driver of a railroad locomotive called an engineer.

Nevertheless, I do feel, and I am sure you will, that the two added stanzas compare with those published in the AMERICAN ENGINEER. So I am sending them to you. I hope you may find as much amusement in them as my father and I found in the poem published in your magazine.

Who worships as his deity
  The goddess known as steam?
And thinks that things electrical
  Are just an idle dream?
Who wishes that all boilers
  Were full of Lager Beer?
The ever-trusted, always-busted,
  Boiler Engineer.

Who wishes every workshop
  Were padded all around?
Who'd rebuild every building
  Or tear it to the ground?
Who looks upon a broken arm
  With sympathetic sneer?
The Scotchman of the universe,
  The Safety Engineer.

MISS CHARLOTTE M. DAVIS,
1015 Farmers Bank Building,
Pittsburgh, Pennsylvania.

Feb. 20—Engineer Marlin Bernhardt of Bronx chapter N. Y. S. P. E. proposes the following resolution:

WHEREAS, THE AMERICAN ENGINEER magazine of the National Society of Professional Engineers has no medium for the interchange of thought between distant members wherein solutions to current problems might be discussed.

THEREFORE BE IT RESOLVED, That this Society recommend to the National Society of Professional Engineers that it set aside a page in the AMERICAN ENGINEER for Forum discussion and for the purpose of having an interchange of thought on national problems of interest to engineers.

Editor's Note: This resolution is not needed, as the February issue of THE AMERICAN ENGINEER carried "Open Forum," it will be continued in future issues, BUT we reserve the unlimited right to debate—censor—eliminate—amplify.

The Editor submits the following copy of *Pittsburgh Technical Calendar* as evidence of a splendid example of co-operation in engineering endeavor. This is worth-thinking over, let us hear what you are doing in your zone of influence.

## PITTSBURGH TECHNICAL CALENDAR

*Published Monthly*

*by the Pittsburgh Affiliated Technical Societies*

K. F. Trechow, Secretary, Wm. Penn Hotel CO. 0710

Vol. 3 March, 1937 No. 6

### PARTICIPATING SOCIETIES

AIEE * American Institute of Electrical Engineers—J. R. MacGregor OF fical 0050

AIME * American Institute of Mining & Metallurgical Engineers—J. W. Paul MOntrose 7156

ASCE * American Society of Civil Engineers—Nathan Schein AT lantic 3900

ASHVE * American Society of Heating & Ventilating Engineers—M. L. Carr GR ant 3860

ASME * American Society of Mechanical Engineers—K. F. Treschow CO urt 0710

ASM *American Society for Metals—Jerome Strauss .....WA lnut 4405

ASSE † American Society of Safety Engineers—J. P. Leonard .AT lantic 6496

AWS * American Welding Society—J. F. Minnotte .....CO urt 0637

AISE Association of Iron & Steel Engineers—Brent Wiley ....AT lantic 6323

ESWP Engineers' Society of Western Pennsylvania—K. F. Treschow CO urt 0710

IES * Illuminating Engineering Society—C. D. Miller .....GR ant 4300

IRE * Institute of Radio Engineers—W. P. Place .....PE nhurst 0880

PSP Physical Society of Pittsburgh—W. H. Michener .....MAyflower 2600

PSPE Pennsylvania Society of Professional Engineers—B. H. Aires ..COurt 0128

SMC Science of Metals Club—M. Gensamer .....MA y flower 2600

SAE * Society of Automotive Engineers—S. Johnson, Jr. .....SC henley 2600

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* Pittsburgh Section.

† Western Penna. Safety Council Chapter.

Tuesday, March 2

### RECENT DEVELOPMENTS IN STRUCTURAL ENGINEERING

W. M. Wilson, Research Professor Structural Engineering, University of Illinois

Cardinal Room, Wm. Penn Hotel, 8:00 P. M.

Civil Section, ESWP

Thursday, March 4

### WAVES, WORDS AND WIRES

Dr. J. O. Perrine, Associate Editor, Bell System Technical Journal. A popular demonstration and lecture covering the latest developments, in telephone, telegraphy and radio.

Urban Room, Wm. Penn Hotel, 8:00 P. M.

ESWP

Thursday, March 4

### THERMODYNAMICS OF PHASE DIAGRAMS

Dr. Harry Seltz

U. S. Bureau of Mines Auditorium, 8:00 P. M.

SMC

Monday, March 8

### WINTER AIR CONDITIONING (INCLUDING OPERATING COSTS)

Group Discussion, Visitors Invited

Room 209 Y.M.C.A., 300 Wood Street, Downtown

Dinner 6:30 P. M. Technical Session 7:30 P. M.

ASHVE

Tuesday, March 9

Detailed Announcement of Meeting Later

Cardinal Room, Wm. Penn Hotel, 8:00 P. M.

AIEE jointly with Electrical Section, ESWP and ASME

Wednesday, March 10

### SAFETY FROM A MANAGERIAL STANDPOINT

Dr. R. M. Ferry, General Superintendent, Aluminum Company of America.

U. S. Bureau of Mines Auditorium, 8:00 P. M.

ASSE

Thursday, March 11

### THE DETERMINATION OF GASES ON STEEL

Dr. Samuel L. Hoyt, Director of Research, A. O. Smith Corporation.

Roosevelt Hotel, 8:00 P. M.

ASM

Thursday, March 11

### PHYSICAL METHODS IN THE DETECTION AND CONTROL OF GAS HAZARDS IN INDUSTRY

M. G. JACOBSON

and

### SPECIAL APPLICATIONS OF COMBUSTIBLE GAS INDICATORS

BY A. E. HARTLINE

U. S. Bureau of Mines Auditorium, 8:00 P. M.

PSP

Tuesday, March 16

### BALL BEARINGS AND BALL BEARING APPLICATIONS

Thomas Crow, Chief Engineer, New Departure Mfg. Company, Bristol, Conn.

Webster Hall, Dinner at 6:30 P. M.

Lecture at 8:00 P. M.

SAE

Tuesday, March 16

### HIGH FREQUENCY TELEPHONE SYSTEMS

R. T. Griffith, Transmission Engineer, Bell Telephone Co. of Pa.

Room 209, Engineering Hall, Carnegie Institute of Technology

IRE

Wednesday, March 17

Detailed announcement of meeting later.

Blue Room, Roosevelt Hotel, 8:00 P. M.

AWS

Thursday, March 18

### REAL ESTATE AND ITS FUTURE

R. L. McKallip, President, Pittsburgh Real Estate Board.

Assembly Room, Fort Pitt Hotel, 8:00 P. M.

A la Carte Dinner, Fort Pitt Coffee Shop, 6:30 P. M.

PSPE

Engr. R. A. H. Jackson,
Ard Cairn, Mobhi Road,
Glasnevin,
Dublin, Irish Free State.
Dear Engr. Jackson:

I have noted with /keen interest your letter of February 17th and the enclousures. I am transmitting the copy of your recent circular issued to your members to Engr. Robert Hall Craig, Editor of the AMERICAN ENGINEER, with the thought that he may wish to reproduce excerpts in an early issue of our publication. I am passing your rule book on to Engr. Arthur V. Sheridan who has succeeded me as President of the National Society of Professional Engineers.

In response to your request, I am sending you a selection of literature, as per attached list, on the general subject of registration and professional organization. These will give you an idea of the problems we have met and the progress we are making in this country.

I shall personally look forward with pleasure to receiving your reports on the future activities and progress of the Engineers' Association of Ireland.

Faithfully yours,

D. B. Steinman.

The following material has been mailed separately:

Handbook 36.

Information Concerning the Engineers' Licensing Law in New York State.

A Question and the Answer.

National Society of Professional Engineers—Objectives, Constitution, Etc.

Accomplisments and Objectives of the N. Y. State Society.

Engineering Legislation in N. Y. State.

Engineers' Registration and Related Problems of the Profession.

A Model Law for the Registration of Professional Engineers.

The following issues of THE AMERICAN ENGINEER:

March, 1936
April, 1936
June, 1936
July-Aug., 1936
September, 1936

Editor: We will publish the letter from the Engineers' Association of Dublin Ireland in an early issue of the AMERICAN ENGINEER. We extend "hands across the sea" to the Irish Engineer Association.

*Re-Employment Section*

Editor: My particular need at the moment is a job. Wherefore, I suggest that an "Employment Section" be provided for in subsequent issues of THE AMERICAN ENGINEER, that a reasonable fee be charged members of the N.S.P.E. for such insertions, that no advertisement be accepted from anyone who is not a member of the N.S.P.E. and lastly, that it be urged editorially that every consideration be given fellow-members of the National Society.

Certain of the older and more "fossilized" engineering societies look with askance upon the efforts of N.S.P.E. to create a real Professional Society and various agencies connected with them carry this attitude to the extent of being rather lukewarm when one appears in the light of a candidate for employment. As practical men, we must appreciate that a good employment section plays its part in attracting new members.

An employment section will be most valuable in enabling engineers to state their particular needs in the matter of openings, and will result in added revenue for the organization of which I am proud to be a member.

Cordially,

William Stack,
Civil Engineer and Surveyor.

## TRAINING AND REGISTRATION

*(Continued from page 7)*

As a step in the direction of developing an engineer who will rise to the occasion and assume his responsibility as well as his opportunity for directing the course of civilization the National Society of Professional Engineers, at a recent meeting of the Board of Directors, accepted a recommendation of the writer outlining the plan and scope of an illustrative examination for the right to practice professional engineering. Such an outline is as listed below:

Such an examination would, it is believed, reveal reasonably well the quality of the candidate who, it is hoped, may one day aspire not alone to professional distinction but also to social achievement. If those who are most concerned refuse to identify themselves with the march of events and are driven by, instead of directing, public opinion, the results will be the less beneficial either to public or to profession. The establishment of fundamentally broad and thorough standards of qualification for professional practice is the surest way to the development of learned and socially conscious members of the engineering profession.

Because of the common purposes and the political framework of the State professional bodies which form the National Society of Professional Engineers, the development on a national scale of reasonably uniform training qualifications and practices can be greatly advanced through the medium of this society, aided by the licensing boards and directed public opinion. There will probably never be absolutely identical conditions in any two states any more than are identical medical acts, legal practices, election statutes or divorce laws. However, the need for reciprocity in the case of engineers is sufficiently great to merit the utmost cooperation between states. To bring this about the National Society is better suited than any other agency in the country. It seeks to reconcile divergent opinions and to enlighten the general public, whose voice is, in the final instance, the legislature of the several states. Today its program offers a fundamentally sound approach to the solution of the professional, economic and social problems which are at once the opportunity and the responsibility of those whom the State has certified as professional engineers dedicated to the service of society.

### *PROFESSIONAL QUALIFICATIONS*

To be Determined Through Examination
by State Agency.

Recommendations for Engineering License

| | *Subject* | | *Evaluation* |
|---|---|---|---|
| | 1. *CHARACTER* (Investigation and evidence, including Oath of Service) | | |
| | 2. *GENERAL KNOWLEDGE* | | 30 |
| | a. Mathematics | —algebra, geometry, trigonometry, analytical geometry, calculus | |
| | b. Pure Science | —physics, chemistry, astronomy, etc. (general principles) | |
| To be taken at any time after age 21 | c. History | —ancient, medieval, modern | |
| | d. Literature | —English—also translations of classics from other languages | |
| | e. Philosophy | —history of philosophy, logic, etc. | |
| | f. Political Economy | —financial and social orders | |
| | g. Languages | —fundamental knowledge of at least two foreign languages | |
| | h. Law | —administrative and commercial (general principles) | |
| | 3. *SPECIALIZED KNOWLEDGE* (General Principles) | | 60 |
| | a. Applied Sciences | —Mechanics, statics, dynamics, hydraulics, bacteriology, electro-magnetism, etc. | |
| | b. Structural Engineering | —Materials, frames and structures of all types | |
| To be taken upon graduation or equivalent experience | c. Mechanical Engineering | —Materials and machines of all types | |
| | d. Mechanical Engineering | —Generation, transmission and application of electricity and electric power | |
| | e. Chemical Engineering | —Analyses and syntheses of all materials and products incidental to engineering | |
| | f. Hydraulic Engineering | —Sanitation, water supply, rivers and harbors | |
| | g. Geodetic Engineering | —Measurements and observations, land, water, astral, etc. | |
| | h. Professional Practice | —reports, public speaking, codes, financing, evaluation, etc. | |
| | 4. *TALENT OR PERSONAL EQUATION* | | 10 |
| | Project to ascertain: | | |
| To be completed before licensing | | Ability to learn<br>Ability to apply<br>Originality<br>Resourcefulness | |
| | TOTAL | | 100 |

The terms used and the subjects and scope thereof are merely descriptive.

## THE UNITED STATES

*(Continued from page 9)*

buried by this sterile material, and ruined for the use of man.

This is illustrated by this picture of Coon Creek, Wisconsin. Recent gullying and washing to the depth of 13 feet at the point at which this photo was taken reveals this down side up or burying process. The natural precivilization process shown by the lower eight feet of topsoil with over two feet of extra rich soil at its upper portion, geographically calculated, took over ten thousand years to deposit, while the upper five feet of coarse grained, poor quality, over wash deposits completely burying this valuable land from the support of life took place during the last sixty to seventy-five years.

This process is not confined to Wisconsin or any other one locality. In the previously rich and fertile Piedmont region of the South tens of thousands of acres of productive bottom lands have thus been buried and have reverted to worthless wilderness, growth of bush and interior timber.

In the more arid western regions corresponding over wash deposits of sand and boulders, supporting only a scant growth of bush, have to a great extent replaced the former well-grassed bottom lands upon which the grazing industry depended for natural hay, changing prosperous cattle raising country into deserts.

In our own New England this process has started and is well under way. Symptoms have been noted in many places. There are strong bank erosions along the upper reaches of the rivers and much sand over wash on the downstream beginnings of the alluvial valleys. This is apparent to even casual observation at places like the Winooski Valley in Vermont.

### Value of Top Soil as a Protection

When the surface of the soil is protected by spongy material, grass, humus, roots, bushes, trees and cover crops, water is retained long enough so it soaks back into the subsoil until it reaches a more impermeable strata instead of running off on the surface to form excessive floods.

The water table, the height of water below the surface, is thus maintained. This is indicated by the height of water in a dug well. When the water table is too low, the well goes dry. The soil is the natural and best reservoir for water, and gives it up gradually through wells, springs, seeping and to tree roots. Rainfall during the growing season is rarely adequate and vegetation must depend on this stored ground water, therefore, lowered water table results in drought, poor crops, arrested tree growth, dried up brooks and low reservoirs.

So, by allowing denudation of the land and permitting the water to run off and erode it at a rapid rate, you can see the crime that we have committed against our country, ourselves and posterity, and that water control and soil conservation are of greater permanent economic importance to the country than just damming the floods alone. Conservation estimates are that $400,000,000 of productive land values are washed and blown away each year by water and wind erosion, and that the loss in this country to date since the advent of civilized man is about 10 billion dollars. Carrying this out in money values, the cumulative loss may reach 30 billion within fifty years if not curbed. This does not include damage from the filling of reservoirs and river channels, loss of water storage and power, and heavy flood damage due to successively higher crests.

Systematic and extensive adoption of reforestation, terrace and contour farming, crop rotation, cover and soil building crops, strip-cropping, gully damming, lateral ditches, silt catching, restoration of natural ponds and swamps that have been drained, and of the old up-stream mill ponds, and other activities of restoring and conserving the land at the most conservative estimate will result in a reduction of at least 25% of our flood waters, restore partially depleted land and materially check the onward destruction by erosion.

### Destruction of Productive Land

At the present rate of destruction, it is estimated that only one hundred and fifty million acres of really fertile land will remain in this country after fifty years. This acreage is but 8% of the total of our country and is so formed and situated naturally as to resist erosion without control work. It is considerably less in extent than the area of the State of Texas, equalling, approximately, the combined areas of New Mexico and Nevada. Once the rest of the Country has been ravished of its topsoil and its water table lowered beyond a certain point this country will no longer be able to support its people, and it will be incapable of restoration until after the passage of centuries of favoring conditions.

Dr. Hugh Hammond Bennett, Chief of the Soil Conservation Service, tells us that in America there are some 987,000,000 acres of land classed as "agricultural." Of this total only about 610,000,000 acres is crop land, that is, land tilled in the past, tilled at present, or suitable for tillage in the future. Of this crop land, some 457,500,000 acres, or 75%, is subject to erosion. About 200,000,000 acres already have been seriously impoverished. The remaining 257,000,000 acres is being rapidly depleted by dust storms, drought, lowered water table, erosion, deforestation, improper agricultural methods and floods, and must be conserved since they constitute the bulk of our still productive land.

Topsoil, roughly speaking, is composed of rock and mineral matter decomposed by the ammonia, nitric and hydrochloric acid in the rain water and mixed naturally with the decaying animal and vegetable matter known as humus. This is a slow process and it takes from 400 to 600 years to produce 1" of topsoil under natural conditions. Except in the relatively few rich bottom lands, the topsoil in this country is thin and easily depleted, and in the bottom lands, floods are covering it with useless silt. Topsoil is the life of the nation, it supplies, with the aid of moisture, all our vegetable and animal life, all of our food and clothing. When erosion and flood has once been allowed to carry this topsoil away, the resulting devastation will mean national bankruptcy and the decay, if not the end, of our national civilization.

It is impossible to accurately ascertain our past loss, but soil experts of the Department of Agriculture, making studies and research throughout the land, estimate that in the Mississippi Valley alone, over 300,000,000 tons of topsoil have been washed away from the reach of man. It is hard to visualize this amount, but if every man, woman, and child in a city of 150,000 population drove a one-ton truck and carried a load of topsoil a day, it would take them 6½ years to remove the amount equal to that which has been washed away. The loss from the entire country per year is estimated at 3,000,000,000 tons, or enough to fill a train of freight cars 475,000 miles long, or enough to circle the earth at the Equator 19 times.

### Dams and Conservation

Dams, revetments and dikes for flood control, etc., are but units in the entire problem and in the main their cost is *expended dollars for* localized protection with no profit or return. Their cost is merely an *expenditure* not an *investment*. Their maintenance is also an additional drain on the public funds, non-productive and bringing in no return.

On the other hand, dollars spent in upstream engineering, soil conservation, land restoration, reforestation, power projects, water supplies, etc., are *invested* dollars that will bring in a productive return and enrich and preserve the nation. How sensible is it then to appropriate huge expense for non-productive protection and to neglect the investment? It is like stopping a leak at the spigot while the contents of the barrel empty at the bunghole. From various estimates considered, it would seem that at least *$5.00* should be invested in preventive conservation measures for every one dollar necessarily expended for higher water protection. It has been repeatedly demonstrated by the success in conservation efforts in different localities by different conservation experiments by government departments that such investment is one of the best for the Nation's money, both in capital return and providing for the sustenance of the coming generation.

### Factors Toward Progress

The Department of Agriculture, the National Resources Commission, the Army Engineers, various Power Authorities, eminent engineers, scientists, hydrologists, the President, Governors, legislators and professional engineers throughout the country are aware of and recognize the dangers besetting us. All are striving in their different fields to do something along the lines of their own specialty and ability. Attempts at a cooperation are earnestly made, though handicapped by the fact that some believe that their own specialized endeavors are the most important, and still greater handicap is the political aspect of the matter.

The problem is not only a national problem, but one that requires political concurrence by the various states included in each drainage area or watershed. Politics, state rights, incompetency in public officials, poorly equipped appointees, extravagant tinkering, maladministration, graft and waste are some of the retardant factors.

Therefore, the Water Control direction must be raised above such factors.

The knowledge and literature on Water Control in all its phases, except the political, is extensive; enough is known to proceed upon a comprehensive coordinated plan, if the various agencies could be politically unified under a central, supreme engineering control and some such step must be taken in the near future and funds appropriated by the Nation and its States for its joint operation.

One of the most encouraging symptoms of a broadening view concerning this problem is that new principle enunciated in the Flood Control Act of June 22, 1936, known as the "Omnibus Flood Control Act." It provided for a sort of duel concurrent consideration by the Department of Agriculture and the Army Engineers of soil erosion problems and corrective measures to insure soil and water conservation among the headwaters, along with the investigations underlying the major construction projects and control work to be located on the main channels and tributaries. However, it is a difficult matter under the present political set-up to coordinate the aims and activities of the large number of Federal and State Bureaus, units and groups, worthy of retention, concerning the various aspects of water control, and it is further politically

complicated by the interstate character of practically all rivers with their many tributaries, nor have we any assurance that the vast sums appropriated will be handled any more honestly or efficiently than in the past, or that they will go very far toward solving the country's big problem of water control.

### What To Do

It is apparent that the Greatest investment of skill, knowledge, money and labor lies ahead, and that it should be determined by a most serious study of all phases of this national problem.

This nation must for once raise itself above petty, local, partisan, or selfish politics in a unified effort while there is yet time to save its own life and the lives of its constituent states.

It has the capable scientists, engineers and executives familiar with the many phases of water control and land preservation, it has the idle man-power, it has had money to squander on all sorts of more or less unessential activities. It has the best engineering and scientific talent and knowledge in the world, capable to coordinate and unify the planning, the execution, the control and maintenance of a nation-wide integrated water control system. There are engineers in every state capable of tackling the local problems in conjunction with and subordinate to a general central plan. A specific basic scheme of drainage basin planning and development must be worked out, coordinating all present agencies, federal and state, and a combined National and State Authoritive Program laid down for the whole country.

Private enterprise, in a like condition, would form a WATER CONTROL ENGINEERING BOARD which would have the planning and direction of all water control activities and which would project and command the activities of all federal and state agencies independent of political, military, or bureaucratic control.

Such a WATER CONTROL ENGINEERING BOARD should be composed of engineers and scientists selected by reason of their knowledge of the component circumstances of water control and chosen from the different governmental departments now more or less involved in Flood Control and Soil Conservation, supplemented by professional engineers chosen from the different states and headed by a triumvirate of three engineers selected for this responsible position on the basis of their past records in successfully and profitably managing large undertakings. This triumvirate should be chosen for their managerial ability rather than for specific knowledge of any phase of water control.

This board should not be part of any other activity and should be responsible for its acts only to the supreme Executive, Legislative and Judicial powers of the Nation.

On the other hand, all activities of the other departments or government and state relating to water control, should be under its direction. Incompetents must be weeded out and the many very able men in government employ must no longer be unduly restricted in the services that they are paid to render the country. Once this situation is achieved, we can feel assured that continued productivity and life may be assured our country.

### How To Do It

Professional Engineering Societies in the different States, recognizing the responsibility of the profession to the nation and its citizens, have formed State Committees on Flood Control and Soil Conservation, and have appointed delegates from these Committees to form the National Committee on Flood Control and Soil Conservation.

These committees, in conjunction with progressive newspaper editors, civic clubs, educational organizations, engineering groups, agricultural bureaus, planning boards, commissions, intelligent governors, leading legislators, etc., are carrying on an educational campaign to acquaint the people with the avoidable calamity ahead of them, and to impress them with the fact that saving our productive land in the United States is a paramount necessity and more important to our future than railroads, banks, political parties, or even the government itself.

If our present political government cannot adapt itself to the situation, can you not see a rapid trend toward another form or lack of government, when food becomes scarce and the nation feels the pangs of hunger and is assaulted by disease, as now in Szechuan Province of China? The decay of the Chinese civilization under like conditions with which we are now confronted should give us cause for thought and action.

If a fair percentage of our citizens and civic organizations take up the matter, bringing individual and collective pressure to bear upon their senators and representatives, federal and state, can we not hope that political action may be taken toward setting up a WATER CONTROL ENGINEERING BOARD as far above politics as the Supreme Court or the Office of the Comptroller General?

What is needed is a prominent institution above and without the spoils system in all its branches, and unaffected by successional elections or party politics.

The Country can be conserved and restored for permanent use, if we do not wait too long, but the politicans won't act unless we demand it.

## FLOODS AND SOIL CONSERVATION

*(Continued from page 6)*

It is obvious that we must also attack the problem at the root. We must go into the upper reaches of the watershed and find those areas which have been carelessly deforested or burnt over. We must carry on an extensive program of reforestation to anchor the soil on steep slopes and blanket it over with a litter covering. Properly managed woodland is one of the most effective deterrents of rapid run-off known to man. Research specialists of the Soil Conservation Experiment Station at Guthrie, Oklahoma, checked the water losses from a fallow plot and a wooded plot over a five-year period. The degree of slope and the amount of precipitation was the same for both plots. Yet the fallow ground in that period discharged nearly 15,000 gallons of rainfall, while the woodland lost less than a hundred gallons. A judicious program of tree planting can unquestionably alleviate the task of the downstream engineer by considerably reducing the amount of water with which he is forced to deal. If we could turn all the land in our large watersheds back to growth of timber, we might, with the help of downstream engineering, be able to eliminate the flood hazard within the space of a very few years.

This would be a pretty thin solution. It would leave us with a problem even more important than the flood menace—the problems of feeding 125 million people. The American public, we may be sure, could not subsist very comfortably on a diet composed exclusively of nuts, fruits, and berries. The American farmer would not take kindly to the suggestion that he burn all his seed, kill all his livestock, and give his whole farm over to woodland. Fortunately, no such extreme measures are necessary. There is plenty of land in this country suitable for crop production, plenty suitable for grazing. And it is perfectly possible to carry on these occupations without negelcting the source of the flood problems. What we need is not the abandonment of agriculture but the modification of prevailing systems of land use. To hold rainfall upstream and make it soak into the soil, it is not necessary to restore nature's original vegetative pattern but merely to approximate it. We must consider the inherent adaptabilities of every parcel of land and use it according to its natural needs.

Steeply sloping or badly eroded lands should be retired to woodland growth. Usually the soils of these areas are so severely depleted that they cannot support a healthy growth of crops or forage in any event. Tree roots will lash the soil and hold it in place. Forest litter will absorb the moisture and discharge it slowly. There is a large acreage suitable for grazing. Such land may have a slope too steep for row crops but not sharp enough to warrant retirement to trees; or its soil may be pecularily adapted to legumes, grasses, and small grains.

Broad expanses of land are perfectly well adapted to row crops provided only that they are farmed in accordance with scientific principles of conservation. Crop rows should be laid out laterally across the face of a slope rather than up and down. In this way each furrow becomes a tiny catchment ditch rather than a drainageway. Often it is desirable to supplement this practice with terraces or alternating bands of legumes and grasses laid out perpendicular to the slope.

Gullies should be mended by check dams and planted with thick-growing trees, vines, or grasses so that they will hold the rainfall instead of pouring it forth as they now do. Upstream engineering works—farm reservoirs, water-spreading dams, and irrigation dykes—will help to hold the escaping moisture and drive it into the ground. Pasture furrows laid out on the contour will accomplish the same purpose and thus aid the growth of forage.

All these measures are now being practiced by thousands of American farmers in cooperation with the Department of Agriculture. The Soil Conservation Service alone is operating 540 erosion control projects and CCC camp areas covering more than seven million acres on which private landowners are trying to save their soil resources and hold the rainfall upstream. Inevitably, it seems to me, the spread of these practices will tend to lower flood crests. Minor floods will probably be eliminated in many instances; major one will be reduced in volume and intensity. For a really effective attack at the root of the flood problem these practices must be extended over an ever-widening area. To attain the greatest possible protection against floods, they must be buttressed by downstream engineering and reforestation.

We must not expect to control floods overnight or even in the space of a few years. It will take time, patience, and careful collaboration. But when the American public becomes aroused something is usually done. The Omnibus Flood Control Act of 1936 recognized the importance of upstream engineering and water conservation measures in a program of flood defense. In cooperation with the Army engineers, the Department of Agriculture is about to undertake surveys of 222 watersheds in order to determine the possibilities of a comprehensive

*(Continued on page 20)*

# NEWS OF STATE SOCIETIES

## NEW JERSEY

Modification of original resolution creating a commission, by legislative enactment, to determine legislative policies with respect to a state-wide, rational highway planning program extending over a definite period of years.

Original resolution, sponsored by the Professional Engineers Club of Hudson County, presented to the parent organization, The New Jersey Association of Professional Engineers and Land Surveyors, for endorsement and adoption as a legislative activity in cooperation with the State Highway Department and The State Planning Board.

Conference Committee:
Engineers:
Jacob L. Bauer, Union, *Chairman.*
Russell Wise, Passaic.
George Randolph, Monmouth.
C. George Krueger, Hudson.
Beale Schmucker, South Jersey, ex officio.

RESOLUTION

Be it enacted by the Senate and General Assembly of the State of New Jersey:

1. Whereas a State-wide survey of road and traffic conditions is desirable in order to assist the Legislature in determining its future policy with respect both to the construction and maintenance of streets, roads, highways and footpaths and it is desirable to ascertain the facts with regard to volume, character and distribution of traffic on streets and on primary, secondary and tertiary roads; and it is essential that an economic survey be made to reveal sources of highway revenues to the end that road construction, both rural and urban, may be considered in accordance with the facts and funds equitably distributed for street and highway purposes.

2. A Commission is therefore hereby created, to be known as The Highway Study Commission, consisting of eleven members. One member shall be a State Senator, appointed by the President of the State Senate; one member shall be a member of the State Assembly, appointed by the Speaker of the House of Assembly; one member shall be the State Highway Commissioner; eight members shall be appointed by the Governor, representing respectively agricultural interests; automobile owners; licensed professional engineers; municipalities; county Boards of Freeholders; the Faculty of Princeton University; the Faculty of Rutgers University; the State Planning Board. The Commission shall be appointed for a period of two years.

3. Such commission shall elect a chairman and vice-chairman from its membership and shall appoint, and at pleasure remove, counsel, engineers or other assistants as may be necessary, including as far as practicable, persons experienced in the work to be undertaken by the Commission.

Such commission shall have full power and authority and it shall be its duty to make a study and survey of the highway traffic needs and requirements of the State and shall formulate a complete highway and road building policy for the State and its sub-divisions and make recommendations as to the means of financing same. Said Commission shall make a thorough study of engineering, economic and practical problems, such as new locations for avoiding congested areas; the construction, reconstruction and regulation of public streets, highways, roads and footpaths in the State including a systematic all-year maintenance program; a rational order of improving secondary roads and highways and local roads and their correlation with the highways on the primary system of the State; the classification of arterial highways; the adoption of the parkway and/or freeway system; highway research as a departmental and academic study together with such other recommendations for improvement an increased efficiency and economies in connection with highway construction, maintenance, classification, operation and supervision of arteries of vehicular traffic; bus and truck regulations thereon; safety and beautification regulations; and the installation of traffic signs and control signals.

4. In making any surveys, studies, examinations, investigations and compilations requiring engineering services, clerical and stenographic help, the Commission, with the consent of department heads, shall utilize such officers and employes of State departments as far as practicable and as they find necessary and they may request and shall receive advice and expert assistance from such departments and commissions of the State and each and every officer or employee thereof; and the cost of such services and assistance and prementioned appointments shall be paid from any moneys allocated for such use by Federal Aid and/or appropriated and available for construction, reconstruction and maintenance of State highways. Such funds to be used by the Commission, and not supplied from Federal sources, shall not exceed one per cent of the State Highway construction funds for any current year.

5. Such Commission shall have power to compel the attendance of witnesses and the production of books and papers, and shall have power to adopt rules for the conduct of its proceedings. Any person disobeying a subpoena issued by the Commission shall be liable to a fine of one hundred dollars for each offence, to be sued for and recovered in an action of debt in the name of the State of New Jersey; said fine, when recovered, to be paid to said State.

6. The members of such Commission shall receive no compensation for their services but shall be entitled to be paid their actual and necessary expenses incurred in the performance of their duties.

7. Such Commission shall hold public hearings within or without the State from time to time as the progress of its work may warrant and shall make a report of its proceedings together with its recommendations to the Legislature on or before the first day of February, 1938.

8. The sum of ten thousand dollars ($10.000.00) or so much thereof as may be needed, is hereby appropriated for the expenses necessarily incurred by the Commission.

9. This act shall take effect immediately.

Report of the Sub-Committee on Highway Study Legislation.

To the President and Board of Trustees, New Jersey Association of Professional Engineers and Land Surveyors.

Gentlemen:

Your Sub-Committee on Highway Study Legislation, reports as follows:

Shortly after its appointment at the meeting of the full Committee at Newark, on January 28, 1937, the Sub-Committee met at Trenton, and had an audience with Mr. C. F. Bedwell, Construction Engineer of the State Highway Department, who raised some objections to certain paragraphs of the resolution, and to its form.

Following this meeting, the resolution was revised, and was set up in the form of an Act of the Legislature, a copy of which is hereto attached.

On February 16, the Sub-Committee had a meeting at Trenton with the State Highway Commissioner, Mr. E. Donald Sterner. There were also present at this meeting Mr. James Logan, Asst. State Highway Engineer, Mr. Bedwell, and Mr. B. B. Van Tine, representing the Law Department.

A full discussion was had of the proposed Act, by all of those present.

It was explained by the Committee that the object of the proposal was to aid the past good work of the Department, by creating this Official Body, under Legislative authority, to do the things set up in the Act. It was thought by the Committee that such matters as were proposed to be considered by the Commission, would be better placed before the Legislature and the Public than at present. It was also pointed out that a very important work that the Commission could do, would be to act and report strongly against further diversion of Highway Funds. It was thought that this phase of the situation could be strongly presented to the Public by such a Commission.

Mr. Schmucker said that the proposed Act had been before the State Association of Freeholders, and had been received by that body with favor. He also talked of the need of a full examination of all types of roads in the State.

Mr. Randolph said that the Act would carry a better investigation of the needs of the second and third class roads, than is possible under present Law.

Mr. Krueger said that the proposed Act was modeled after the New York State Act, which had been in operation for three years. He thought that the Public should now have the advantage of the action proposed, and that the whole road situation in the State would be benefited.

Mr. Bauer stated that there was not, to his knowledge, in the proposal, any mixture of politics which would be detrimental to its operation. He thought that such a Commission, if properly set up, could accomplish much for the good of the State and its Highways.

Mr. Bedwell said that for the present fiscal year, there would be no funds which would be available for use by the proposed Commission.

Commissioner Sterner said that the objects of the proposal, considered theoretically,

were good, and that many of the proposals were now being considered and carried out by the Department. Practically, however, he opposed the Act, as in his opinion, there would be too much politics in the appointment and the work of the Commission. He thought that the time was inopportune for the setting up of the proposed Commission.

Your Committee would also report that it has been impossible to contact the State Planning Board, as word came from that Board that they could not meet the Committee until early in March.

Signed by the Committee.

J. L. Bauer, Chairman
Russell S. Wise
George F. Randolph
C. George Krueger
B. M. Schmucker, Ex Officio

* * *

Editor Note: Look what Jersey is doing—you will do well in your State to follow Jersey's example. Write Engineers Schmucker or Weeks for copies of these forms, adjust them to your needs and "grow with Jersey."

### NEW JERSEY ASSOCIATION OF PROFESSIONAL ENGINEERS AND LAND SURVEYORS

### TO YOU

*Licensed Engineers and Land Surveyors in New Jersey:*

You are a Licensed Professional Engineer or Land Surveyor. Unless you are the one of each ten in the State who have helped by joining the Association, you have done nothing to aid the status of yourself or your Profession. If you are that one, throw out your chest. If you are one of the nine, quit being ashamed. Join up, pay your dues and get into the work. It's going over without you, but will go over bigger and better with you. Do your part.

The National Society is going forward in its fight for the Engineer. It has been of great aid in the securing of Licensing Laws, to the extent that there are now Engineer Licensing Laws in thirty-four States and pending Legislation on this point in three others.

The President's demand for a Secretary and a Department of Public Works was sponsored by the National Society of Professional Engineers. This is just recognition.

The National Society's magazine, THE AMERICAN ENGINEER, is of vital interest to all Engineers.

As for the State, the Convention in Paterson was great. I have never before seen such interest, attendance and enthusiasm at an Engineers' meeting. If you were there you were all pepped up, if not, ask one of your friends who was, and you will join up and be at Jersey City next year.

Your State Association has reached a new accord with the Licensing Board and all applications are now forwarded to the local Chapter for report.

A joint Committee has worked with the State Board on Legislation and amendments to the existing laws have been carefully considered and will be introduced in this Legislature.

A joint Committee has worked with the Architects and an amendment to their laws will be introduced which will remove existing injustice to the Engineers. This will be moved by the Architects. They have met us most fairly.

We are gaining new prestige and recognition everywhere, and it is this, that is helping largely to gain co-operation on all sides.

At our Annual Meetings, the vote is now by Chapters, with one vote for each twenty-five members in good standing. Keep in good standing and boost your Chapter. Vote on the questions that are vital to you.

Our aims are to unify the members of our Profession and to place it and ourselves on a uniformly high plane of practice and ethics; to work diligently to raise the status and condition of the Engineer.

If you will join us, you can help in this work, if you do not, you are re-miss in your duty as an Engineer. Join your Chapter, keep in good standing and take a part in what we are accomplishing for your Profession and yourself.

Very respectfully yours,
Beale M. Schmucker,
*President.*

## PENNSYLVANIA

Frederick H. Dechant, President of the Pennsylvania Society of Professional Engineers, was guest speaker at the March meeting of the Philadelphia Chapter which was held at The Engineers Club, 1317 Spruce Street.

President Dechant's subject was "A Message to the Registered Professional Engineers."

J. Edgar Hires is President of the Philadelphia Chapter and W. E. Witte is Secretary.

* * *

Blank Engineering Company,
Blank Street,
Reading, Pa.

Dear Sirs:

Investigation by the Reading Chapter of the Pennsylvania Society of Professional Engineers has disclosed numerous violations of the Act of Assembly relative to the unauthorized practice of professional engineering on the part of individuals, copartnerships and cooperations.

The Society believes that this condition exists largely because of a lack of knowledge of the law on the subject, and with this in mind I am enclosing a copy of the Act of May 6, 1927, P. L. 415, which is self explanatory and clearly defines who is permitted to practice professional engineering in the State of Pennsylvania.

Under the law not only is the actual practice of engineering by one unauthorized, illegal, but also advertising and holding oneself out as qualified or willing to practice engineering.

This Society is ready to meet with anyone interested in order to assist them in determining what is permissible under the law. The Society requests the cooperation of all those who desire to practice the profession of engineering in this State.

Very truly yours,
John Batdorf,
*Solicitor.*

Reading Chapter of the Pennsylvania Society of Professional Engineers.

## NEW YORK

Officers of the Steuben Area Chapter, New York State Society of Professional Engineers, who have been elected for 1937 are as follows:

President—Alfred C. Jordan, 99 S. Westmont St., Elmira, N. Y.

Vice-President—Hubert E. Snyder, 810 West Water St., Elmira, N. Y.

Secretary—Hermann F. Eilers, 162 Watauga Avenue, Corning, N. Y.

### WESTCHESTER COUNTY CHAPTER

New York State Society of Professional Engineers, Inc.

### CHAPTER NEWS

White Plains, N. Y., March 4, 1937, Vol. II, No. 7.

### MARCH MEETING

The March meeting of the Chapter was held in the old Supervisor's Chamber, Court House, White Plains, on Thursday, March 4th at 8:15 P. M. The feature attraction at this meeting was a talking picture history of the newspaper business and a day with the publication of a metropolitan newspaper. E. B. Dooley of Yonkers, motion picture editor of the *New York Sun*, arranged for this presentation.

### DINNER MEETING

The annual dinner certainly lived up to the advance prediction. It was the largest engineering affair ever held in the County. Over four hundred were in attendance, and it was a huge success. Congratulations to all who assisted in making the dinner such an outstanding success.

### ELECTION OF OFFICERS

Ballots have been sent to all eligible voters.

### THE CANDIDATES

*Andy Anderson*

Former director and assistant secretary of the Chapter. At present with N. Y. City Parks Department. Home—Yonkers. Active Public Speaker Committee.

*Howard Barnes*

Incumbent director, former vice-president of the Chapter and deputy county engineer. Home—Croton.

*Ollie Collins*

White Plains. Since the dinner, who doesn't know Ollie. With County Engineer's office.

*Jim Duffy*

Incumbent director. Home—Rye and Mamaroneck. Chairman of Water Supply and Publicity Committees.

*Jack Edelstein*

White Plains. With State Highway Department. Active on Dinner Committee.

*Ben Krey*

Incumbent director. Home—Pleasantville. Chairman of the Legislative Committee for past few years.

*Geo. MacBeth*

Mt. Vernon. Chief Gas Engineer, Westchester Lighting Co., and one of the wheel horses of the Chapter.

*Frank MacLeay*

Mamaroneck. Leader of the educational classes of the Chapter.

*George Smith*

Pleasantville. One of the younger members of the Chapter. Associated with Charles Sells.

*Ray Potter*

Mt. Vernon. You all know Ray!

Though nominated, Harold Watt asked to be relieved, though appreciating the confidence. He cannot spare the time

### NEWS

The new make up of the AMERICAN ENGINEER and the new Editor's gracious bow in the direction of the Westchester Chapter shows promise that greater improvement in our National Publication can be expected.

The Program Committee hopes that the gratifying attendance at the annual dinner presages increased attendance at regular meetings (no fan dancers) which will permit Benline to arrange for attractive meetings in advance.

At the April meeting, Jay Downer will elaborate on his remarks concerning the World's Fair. In May, the H. P. Penn Company will present a round-the-world tour of highways and construction equipment by talking pictures.

CONSTRUCTION NEWS

The water authority bill approved by the Supervisors has been submitted to the Legislature.

* * *

The building and yards of the Conklin and Pfister Company have been taken under lease by the Dravo Corporation, Pittsburgh, who have a $4,000,000 contract with the city for aqueduct shafts. R. W. Remp of Pittsburgh is in charge, and there will be an office staff of 25.

* * *

The need for a County airport was stressed editorially by the White Plains Reporter on January 22, 1937.

* * *

The Board of Supervisors has advanced legislation in reference to state maintenance of three parkways in Westchester County along the lines suggested by Judge Bleakley at the annual dinner.

* * *

State funds have been requested for the construction of a viaduct on the cross-County Parkway at Fleetwood, and also for a connection between the Sawmill Parkway and the cross-County Parkway near Dunwoodie and Yonkers Avenue.

* * *

In 1936, according to the America Petroleum Industries, Westchester County's gas tax was $2,850,000; auto registration totaled over $2,730,000; a total of 5½ million dollars. The rebate to the County on gas was $70,000 and $615,000 on registration. What's wrong with that picture?

FRANCIS J. LAVERTY,
*Secretary.*

# WEST VIRGINIA

The following are some excerpts from the report of the third annual convention of the West Virginia Society of Professional Engineers held late last year in Clarksburg, West Virginia.

### Secretary's Report

We closed the year 1935, with a total membership of 407, which included 84 Associate Members, 34 Junior Members and three Affiliate Members, besides 286 full members. There has been a marked change in the class of members during this year, as we have made no particular effort to retain our Junior Members, unless they were of the caliber which warranted our assuming that they would eventually become full members by registration. Our totals, therefore, will show after dropping from our lists 24 Junior Members, a slight gain in membership from 407 to 419.

A comparison of membership shows the following for 1935 and 1936:

| Members 1935-36 | Associate 1936-36 | Junior 1935-36 | Affiliate 1935-36 | Total 1935-36 |
|---|---|---|---|---|
| 286-318 | 84-87 | 34-12 | 3-2 | 407-419 |

The number of Engineers now registered, and in good standing in West Virginia is 601. However, 50 of these are out of the state, and have shown no apparent desire to become affiliated with us. I have decided we should not further petition them for membership.

We have quite a number of members who do live out of the state, but I am afraid it is not economical for us to continue contacting these 50 who have shown a lack of interest in our affairs and who no doubt, are registered here simply because of the necessity and for selfish interests. After deducting these 50, we have left 551 registered Engineers in the state, who should be members of this Society.

From the above tabulation, you have noted that 318 of them are now members. Consequently, further numerical strength to this organization must be obtained through the conversion of the 233 non-member registered Engineers, to a belief in our cause. I believe that through individual effort, we can gain 200 members out of the available 233, if we determine to do so.

The Chapters have done very well as a whole along this line, but we must put forth a greater effort for 1937. I hope each member will now determine to pick from his acquaintances, one or more of these non-members and appoint himself to the task of getting his application. Each Chapter should set up a drive to encourage these additions to our roster of members.

### Memberships
### January 1, 1937

| Chapter | Member | Associate | Junior | Affiliate | Total |
|---|---|---|---|---|---|
| Charleston | 134 | 9 | 2 | .. | 145 |
| Elkins | 15 | 4 | 1 | .. | 20 |
| Parkersburg | 20 | 11 | 2 | 1 | 34 |
| Southeast | 45 | 28 | 5 | 4 | 82 |
| Huntington | 22 | 12 | .. | .. | 34 |
| Fairmont | 20 | 8 | 1 | .. | 29 |
| Morgantown | 17 | 24 | .. | .. | 41 |
| Clarksburg | 21 | 1 | .. | .. | 22 |
| At Large | 47 | 2 | 1 | 1 | 51 |
| Totals | 341 | 99 | 12 | 6 | 458 |

### New Chapters

We have again been unsuccessful in any effort to establish Chapters at Clarksburg and Wheeling, two of the most important cities in the state, where we are not represented. I am hopeful that this meeting will not adjourn without the accomplishment of one or both of these objectives.

In an effort to stimulate a Chapter here in Clarksburg, I wish to advise you who live here in this vicinity that you may petition the Society now, by simply signing the application you will find here on the desk at any time during this meeting. It simply reads, "We, the following registered Engineers, residing in Clarksburg and vicinity, respectfully request the West Virginia Society of Professional Engineers to grant us a charter for a Chapter of said Society, to be located in the city of Clarksburg."

If a sufficient number sign this petition, I am positive the Society will grant the request, and you may start off the new year feeling that you have done your part. We have many of you already members at large. Belonging to your own Chapter here, will cost you no more than it now does, and you will gain greater benefits from your membership.

### Associate Members

I would like to urge all Chapters to encourage the registration of their Associate Members, so that they can become full members of the Society, Associate Members, according to our constitution, must be eligible for registration. The class was so designated to allow Engineers working for the Federal Government, and those in the teaching profession, to become affiliated with us because they are, in fact, of the profession, although not required by law, to be registered. They should, through registration, become more imbued with the spirit of this Society, which spirit can only be gained by closer association, which registration brings.

I believe that our full strength, and our importance to the civic and cultural life of the community, will not be fully realized until we have a membership made up entirely of registered Engineers. All members of the medical association, and bar association, are duly licensed doctors or lawyers. Why should our requirements for membership be any less?

Without any detraction from the importance I place upon the help and encouragement we have received from many of our Associate, Junior, and Affiliate Members, I hope that they will eventually become registered, and permit us to gain such a goal, without depriving ourselves of their continued support, and them, of such advantages as we may hereafter be better enabled to give.

### Non-Registered Engineers

I wish to call your attention to two of our experiences with non-registered men during this year.

The first is of minor importance. Similar cases may be known to many of you. In the city of Charleston our President called my attention to a sign in a window overlooking one of our busiest streets, which informed the world without, that the firm within was by the Grace of God, or some other unknown power "Termite Engineers." Since this was a gross violation of our laws, unless said members of the firm were Engineers in fact, and duly registered, I called upon them, and finding neither to be the case, explained our law, and without further argument they willingly and immediately obliterated the title and have made no further attempt to distinguish themselves.

The other case is one of a great deal more importance, because it might have had, and may have a particular bearing upon our Registration Law.

In the September 1st issue of the *Huntington Herald-Dispatch*, there appeared an item under the heading, "Violation Claimed in Hiring Engineer for Kenova Work." The news story under this heading went on to relate that the Mayor, City Attorney, and four members of the City Council, were charged with employing an unregistered Engineer for City purposes, in violation of State Law, in warrants sworn to on the previous day by W. Steward Tabor, a former City Engineer.

Mr. Tabor, in signing his formal complaint, alleged that his successor, H. E. Curtis, had never registered with the West Virginia Board, as required by law.

The article went on to state that the State Engineering Law prohibits the State, a County, or a Municipality from employing an unregistered Engineer on projects costing in excess of $5,000.

I received a letter from the Mr. Tabor above referred to, dated August 31st, asking our assistance in the prosecution of violators of the Registration Law and outlined his position in the matter.

After discussion with others, your Secretary, under date of Sept. 3rd, advised Mr. Tabor that "Our State Society was organized for the purpose of advancing the professional interests of the Engineers. Our support has come wholly from the Engineers of the state, who felt that such an agency is

needed." Continuing further from the above letter, your Secretary stated, "Recognizing that your particular case is of interest to the entire Engineering profession, we will help defray the expenses of this case to the extent of $25.00. We will send you our check upon receipt of a complete report of the case, and the results of your trial in the Justice Court.

"If the accused will admit their error in not having a registered Engineer, and will appoint someone actually qualified by law, I think your purpose would be accomplished, and the case should be dropped."

Under the same date, your Secretary addressed a letter to the Mayor of the City, stating in part, as follows:

"My attention has been called to a news item of Sept. 1st, issue of the *Huntington Herald-Dispatch,* dealing with the employment of one H. E. Curtis in the capacity of City Engineer. I also have a letter from Mr. W. S. Tabor of your city concerning the same matter.

"The West Virginia Society of Professional Engineers was organized in 1934 and has a representation of some four hundred West Virginia Engineers, who are attempting to advance the professional interests of the Engineers and elevate the profession in the eyes of their fellow citizens. The purpose of this Society is similar to that of the Medical and Bar Associations as relates to their respective professions.

"The Society recognizes the pre-qualification of Engineers by registration, as being one of our best methods of raising the standards of the profession, and we were actively engaged in the revision of our registration law, which provides, among other things, that no city shall engage in the construction of any public work where in the contemplated expenditures for the complete project exceeds $5,000 and which work involves professional Engineering, unless the plans and specifications have been approved by and construction supervised by a registered Engineer."

Mr. Owen M. Jones presented the following resolution and moved its adoption:

> "Whereas the Dean of the College of Engineering at West Virginia University has attended this meeting and set forth in detail many of the difficulties and aspirations of the said College of Engineerng. and the various problems facing the College, therefore,
>
> "Be it resolved, that a committee be appointed by the president of this society to cooperate with the President of West Virginia University and other officers thereof to the end that the College of Engineering may be aided in any efforts to gain sufficient funds to carry on and improve the work of the Engineering College."

Mr. Dilcher moved an amendment to the above resolution to include a provision whereby the committee so appointed should petition the President of the University, before the date set for the visit of the Engineers' Council for Professional Development. The amendment was accepted and upon motion, the resolution as amended was carried by unanimous vote.

### Election

The report of the Tellers Committee was read by the Secretary, which showed the election of the following officers to become effective January 1, 1937:

President .....Carl L. Hornor, Clarksburg
First Vice-President .....
.....Roy W. Breece, Huntington
Second Vice-President .....
.....R. P. Davis, Morgantown

Directors, 3 Year Term

L. C. Allen .....Parkersburg
J. M. Clark, Sr. .....Charleston
Paul A. Feather .....Elkins

Director, 1 Year Term

Henry C. Scott .....Fairmont

Upon motion, the report was accepted and the said officers declared to be duly elected to their respective offices.

### 1937 Official Roster

President ....Carl L. Hornor, Clarksburg
First Vice-President .....
.....Roy W. Breece, Huntington
Second Vice-President .....
.....Roland P. Davis, Morgantown
Robert Williamson, Jr. .....
.....Executive Secretary-Treasurer

#### Directors

Ernest L. Bailey, 1937—Charleston
C. P. Fortney, 1937—Charleston
Owen M. Jones, 1937—Glen Ferris
Henry C. Scott, 1937—Fairmont
J. Paul Bundon, 1938—Keyser
Kyle L. Bruce, 1938—Bluefield
Wm. S. Downs, 1938—Morgantown
Laurence Meharg, 1938—Wheeling
L. C. Allen, 1939—Parkersburg
J. M. Clark, Sr., 1939—Charleston
Paul A. Feather, 1939—Elkins
T. A. Polansky, 1939—Huntington

#### Past Presidents

E. W. Lyon, Fairmont
J. E. Settle, Charleston

#### Grievance and Legislative

Ernest L. Bailey, Chairman ....Charleston
C. P. Fortney .....Charleston
R. N. Shepherd .....Charleston
L. J. Steward .....Charleston
Mortimer W. Smith .....Charleston

#### Membership

R. P. Davis, Chairman .....Morgantown
J. M. Clark, Sr. .....Charleston
H. M. Thrasher .....Clarksburg
Pernard G. Sampson .....Fairmont
R. D. Hennan .....Morgantown

#### Ethics and Professional Practice

W. S. Downs, Chairman ....Morgantown
J. Paul Blundon .....Keyser
Owen M. Jones .....Glen Ferris
Roy W. Breece .....Huntington
J. E. Settle .....Charleston

#### Publicity

H. A. Levering, Chairman ....Huntington
Kyle L. Bruce .....Bluefield
J. H. Bankhead .....Elkins
L. C. Allen .....Parkersburg
P. J. Walsh .....Charleston

#### Constitutional Amendments

Henry C. Scott, Chairman .....Fairmont
B. D. Johnson .....Keyser
L. R. Taylor .....Princeton
Carl Scholz .....Charleston
H. W. Saunders .....Coopers

## CONNECTICUT

TO THE COMMITTEE ON APPROPRIATIONS OF THE CONNECTICUT GENERAL ASSEMBLY OF 1937. RESOLUTION ON CONNECTICUT STATE COLLEGE. OFFERED BY THE CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC.

WHEREAS, The educational facilities, dormitory capacity, and heating plant at Connecticut State College are unquestionably inadequate and outmoded and definitely insufficient for the proper education and welfare of the present student enrollment.

WHEREAS, The Engineering School at Connecticut State College is housed in a building totally unsuitable to its needs and is supplied with only 20% of the equipment required by accrediting boards.

WHEREAS, Graduation from the non-accredited Connecticut State College engineering course cannot be recognized by the Connecticut Board of Registration or other State Boards of Registration for Engineers until the State College can conform to accrediting requirements, and its graduates are therefore without the legal recognition that will allow them to practice their profession.

WHEREAS, There is a real need for the education and welfare of youth of the State of Connecticut for a State College that will rank with the State Colleges in other States.

BE IT THEREFORE RESOLVED, That the CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC. in Convention assembled with its various local Chapters in the State of Connecticut, do hereby endorse the movement by the College to fulfill the needs of accreditation of its Engineering Courses in accordance with the State requirements and laws that would permit legal recognition of its graduates as engineers.

BE IT FURTHER RESOLVED, That the CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC. further endorse the statements of the Board of Trustees of Connecticut State College as outlined in the pamphlet put out by them outlining the immediate minimum needs of this institution.

AND BE IT FURTHER RESOLVED, That the CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC. its Officers, Directors, Chapters, and members do unanimously petition and recommend to the General Assembly of the State of Connecticut meeting in the year 1937 that such legislative action be taken as will appropriate a sufficient amount to the use of Connecticut State College that will insure that the present scholastic enrollment may have educational and living advantages to which they are entitled by law and to further insure that upon their graduation that their diplomas will be recognized by the State licensing boards, by other colleges, and by accreditation standards.

This Resolution was unanimously passed at a Regular State Meeting of the CONNECTICUT SOCIETY OF PROFESSIONAL ENGINEERS, INC., held at New Haven, Connecticut, December 12, 1936.

Signed and sealed for the Society
Harry E. Harris, *President.*

ATTEST:
Carl Gotthardt, *Secretary.*

Editor's Note: This is an example of the constant struggle between the "Political Spoils" system and the "Efficiency in Government" plan. We believe the Engineering Profession is making headway in promoting such efficiency.

The Honorable Wilbur L. Cross,
Governor of Connecticut,
Hartford, Conn.

Dear Governor Cross:

Sometime ago I wrote you regarding the merit system for State and municipal employees. I am very pleased and heartily support your merit system or civil service reform bill which you propose in your inaugural this year and also am pleased that it has been introduced for the attention of the pres-

ent legislature. I trust that it will receive the hearty support of all professional engineers and all others who have the best interests at heart for the welfare of the State and municipalities.

If possible, this civil service should be extended to municipal officials in responsible charge of public utilities owned by municipalities, such as electric light and water, so that loyal, efficient and honest service during a long period of time will be rewarded by some protection to the continuity of their service and position from political expediency and the replacing of such loyal, efficient officials by political appointees as a reward for their activities, all of which I think you fully appreciate as no matter how efficient an official may be, fear of such replacement hinders his best work.

Very respectfully submitted,
A. L. Pierce.

Editor's Note: This is an example of the emminent struggle between the "political spoils" system and our efficiency in government plans—We believe our engineering purpose is working wonders in promoting such efficiency.

* * *

## MINIMUM NEEDS OF THE CONNECTICUT STATE COLLEGE

It is now nearly 12 years since the state has made a capital investment at Storrs to relieve a growing strain on student housing.

Today the demand for admission is such that it is possible for the College to admit fewer than half of those high school graduates who express a desire to enter.

The physical plant was overtaxed when the enrollment stood at 500; today, with an enrollment of over 800, the plant is almost hopelessly inadequate.

The University of the State of New York recently refused to include the engineering program of the College on its approved list. The engineering staff and the three engineering curricula were acceptable but the building and the equipment, which is about 20% of what it ought to be, were below minimum accreditation standards. The Engineering Council for Professional Development, the national engineering accrediting agency, will undoubtedly refuse to approve our work in engineering until present facilities are improved. The recently created Connecticut registration board for licensing engineers who desire to follow their profession in this state will not be able to certify the graduates of the engineering division of the State College until that division becomes approved.

The library collection is about twenty-five per cent of what it should be primarily because of inadequate library facilities and because the engineering accrediting agencies have not approved that division here.

### OBJECTIVES

Connecticut ranks 9th among the 48 states in wealth per inhabitant 18 to 21 years of age, inclusive. Connecticut ranks 47th among the 48 states in the amount of money she spends for publicly supported higher education.

Connecticut ranks 47th among the 48 states in the number of students whose homes are in the state and who are attending institutions in the state, and ranks 4th in the number of students whose homes are in the state and are attending institutions in other states.

Present means for caring for 837 students.

*Women*

148 in Holcomb Hall, built to accomodate 95.

39 cared for in college owned faculty houses.

14 commuting from neighborhood homes.

34 living in college owned sorority houses.

6 living in the college owned Home Management House.

*Men*

116 in Storrs Hall, built to accomodate 64.

120 in Koons Hall, built to accommodate 68.

84 in Hall Dormitory, built to accommodate 84.

61 in college owned fraternity houses.

136 in homes of faculty and in neighborhood homes.

50 commuting.

29 housed in garages and shacks.

Inadequacy of plantand equipment has caused the New York State Board of Regents to omit this college from its approved list. The recently created Connecticut examining board has not yet approved the course at Connecticut State College. Should the College fail, as seems likely, to meet the requirements of the Engineering Council for Professional Development, now inspecting all Colleges in the United States, engineering graduates of this College would practically be barred from their profession.

The requests we propose to make to the next three sessions of the General Assembly are not based on a program of expansion. They represent the minimum needs of the present enrollment at Connecticut State College.

## *Special Report*

As a result of an address by President Albert N. Jorgensen of State College, May 20, 1936, before the American Society of Mechanical Engineers at the Farmington Country Club, your Society offered as a public duty of Registered Professional Engineers on May 21st, its support of a program to obtain the necessary funds for the proper continuance of State College.

The services of its Legislative Committee were immediately enlisted and conditions at State College inspected and requirements checked by our members who were appointed to this task.

We made opportunities for Dr. Jorgensen and Dean Walter L. Edel, of State College and supplied speakers from our own membership on other occasions to speak before State, County and City meetings in New Haven, Bridgeport and Stamford, including such groups as the Registered Professional Engineers of Connecticut, the State Society of the Sons of The American Revolution, the Connecticut Society of Professional Engineers and its Chapters, the Power Engineers, Refrigerating Engineers, Alumni Associations, Institute of Radio Engineers, Civic, Luncheon and Church Clubs, Engineers Clubs, Chambers of Commerce, Political Groups and through our meeting on December 12, 1936 brought the matter to the attention of the Connecticut Society of Civil Engineers, American Institute of Electrical Engineers, Society of Automotive Engineers, American Institute of Architects, American Society of Metals, Master Plumbers Association, Connecticut Electrical Contractors Association, Connecticut Merit System Association, American Chemical Society, the Foremen's Clubs of the different cities, Connecticut Road Builders Association, Yale Engineering Association, Bridgeport Engineering Institute Faculty and Alumnae and many other groups who should be interested and received hearty cooperation.

Two particular outstanding occasions in which this subject was given a principal part in the program was the Connecticut Engineering Congress held in Bridgeport, July 25, 1936 and the State Engineering Conference in New Haven, December 12, 1936, both under the auspices of the Connecticut Society of Professional Engineers at which Dr. Jorgensen and Dean Edel spoke and the subject was discussed at length with favorable reaction.

Another was the Annual State Banquet of the Sons of The American Revolution on Washington's Birthday, February 22, 1937 in Bridgeport.

On September 26, 1936 we offered to cooperate with the Connecticut Technical Council who were well represented in our membership through their subscribing member bodies and sent out special letters to ensure attendance of our members at the Engineers' Meeting to be held at State College October 17th and urged that the subject be extended to enlighten outside of Engineering Groups to Church, Luncheon and Civic Groups throughout the State.

On November 10th a meeting of delegates of the Connecticut Society of Professional Engineers from all over the state was held to discuss the furtherance of the fulfilling of the needs of the College at the Graduates Club in New Haven and on November 30th a draft of a resolution on State College to be presented at the next session of the Legislature and at the Connecticut Society of Professional Engineers Business Meeting on December 12th for vote was drawn up. Help in drafting resolutions was offered and accepted by many other groups.

Political leaders were contacted and their favorable interest secured. A personal letter outlining conditions was sent to each and every one of the 35 Senators and 267 Representatives and a number of very favorable replies were received.

Personal contacts were made with as many of the Senators and Representatives as possible.

Engr. Harry E. Harris was elected to represent the Connecticut Society of Professional Engineers on the Bill introduced in the 1937 General Assembly to provide funds for the proper continuance of the College before the public hearing of the Committee on Appropriations.

This work has been carried on at no expense whatsoever to the Society, except for letterheads and envelopes, as the members actively participating have cheerfully defrayed their own expenses for traveling, meals, telephones, telegrams, postage, stenographic help, printing, etc.

On November 24th a delegation of four members of the Connecticut Society of Professional Engineers attended a meeting at the Faculty Club, New Haven upon invitation of the Connecticut Technical Council, and a State Committee on State College was formed. President Harry E. Harris was elected as a member of this Committee to work with this group, whose members were George E. Hulse, Chairman; Russell G. Warner, Secretary; C. Arthur DuBois, William K. Simpson, and J. P. Wadhams.

Personal letters and contacts calling attention to and summarizing conditions at State College were sent or made by the Connecticut Society of Professional Engineers with the editors of Connecticut's twenty principal newspapers with a result of much favorable publicity throughout the State, including editorials and Sunday articles that resulted.

The Board of Directors wish to express the high regard that they have for Dr. Jorgensen and Dean Edel, and particularly for the inspired and zealous efforts they have

made to correct the faulty conditions at State College in order to provide for the qualified youth of this state, the opportunity for a higher education, for which they have proven themselves worthy. With proper financial support, they believe that the emergence of the College as a top-rate institution is assured.

A word of praise for the editors and of commendation for the splendid part that the Connecticut press has taken in this matter is in order.

Those sympathetic political and business leaders who have given their help and support and the senators and representatives who have responded with favorable action will be marked on our record for their public spirited support.

The different technical groups and the Connecticut Technical Council which represents them must be accorded warm approbation for the painstaking way in which they have followed the matter up. Prof. Russell G. Warner is to be particularly complimented upon the duties he has assumed and faithfully performed as secretary of the State Committee, making immediate response to all inquiries and keeping a record of the resolutions adopted and of the representatives to be notified when the time of the hearing is set.

A final appreciation must be expressed to all those groups who have so courteously and cheerfully cooperated, received our representatives, acted upon our letters, passed the resolutions and named representatives to appear at the hearing.

We feel that our action in this important public matter has been one of the many things that justify our existence as an important factor in public affairs, and as a strictly professional group, and I feel particularly happy and proud that it was carried out during my term as your president.

HARRY E. HARRIS, *President,*
Connecticut Society of
Professional Engineers.

### *State Engineers Back Connecticut College*

The Connecticut Society of Professional Engineers has sponsored a State-wide campaign in Connecticut to improve conditions at Connecticut State College, which institution, instead of receiving the support from the State which it required and deserves, has for the past ten years been treated like an unwanted orphan step-child.

This college, a land grant institution founded for the purpose of providing higher education for the qualified children of the average Connecticut tax-payer, in engineering, agronomy and home-economics, is supported by Federal grant, its own earnings, and State funds, and due to the fact that the apportioned State funds have not only been inadequate but are decreasing, the splendid faculty have been endeavoring to provide for students almost three times its capacity, with only from twenty to twenty-five per cent of the equipment required, and have had to turn away and deny higher education to hundreds of well-qualified and deserving youth of Connecticut.

Due to its inadequate curricula facilities, the Connecticut State Board of Registration for Professional Engineers and Land Surveyors, The New York State Board of Regents, The University of the State of New York have all refused to accredit and recognize the degrees that it confers. The Engineering Council for Professional Development has not accredited it as an approved engineering school.

The Connecticut Society of Professional Engineers, its Public Relations Committee and its Legislative Committee are cooperating and supporting the president of the College, Dr. Albert N. Jorgensen, and its Trustees, who include Governor Wilbur L. Cross, of Connecticut, and enlisting Agricultural, Engineering, Industrial, Social, Educational, Civic and Religious organizations throughout the State in an effort to have an appropriation made by the Connecticut Legislature during the 1937 General Assembly to provide for the College's very definite and immediate minimum needs.

Engineer President Harry E. Harris of the Connecticut Society of Professional Engineers is taking an active part as a member of the Committee including members of the State Board of Registration, of the Connecticut Council, and of the Yale College faculty and has spent much time in speaking before different civic groups, urging them to offer resolutions and to send a representatives to the hearing on the bill when put on the calendar by the State Legislature.

The Connecticut Society of Professional Engineers has sent personal letters to the editors of all the principal Connecticut papers and has received assurances of their support in editorials and news items.

The Connecticut Society of Professional Engineers has also sent a personal letter to each one of the thirty-five State Senators and to each one of the two hundred and sixty-eight State Representatives, and Engineer Harris has made favorable personal contacts with many of these Assemblymen.

It is earnestly hoped and confidently expected that this appeal in behalf of the taxpaying citizens and their studious and gifted children will receive favorable action from the 1937 General Assembly, and that Connecticut State College will no longer rank at the bottom of the 48 Land Grant Colleges in the United States, and when and if this condition is properly corrected, due accord should be given to the Connecticut Society of Professional Engineers for the active and virile part that they are taking in this campaign for the public weal and welfare of the citizens of Connecticut.

* * *

### LEGISLATION AND THE ENGINEER IN THE U. S. A.

(From "De Ingenieur"—the official organ of the Royal Institute of Engineers in Holland)

"Ingenieurs" who may trace back their title to the Latin root "Ingenium" have a slight advantage over their English speaking colleagues whose title "engineer," although indicating the root "engine," makes no reference to "ingenuity".

The double meaning which in the U. S. may be applied to the word "engineer," i.e., engineer as well as engineman, and the misuse of this title by all kinds of otherwise law-abiding artisans has caused the engineer-ingenieur to look for legal protection of his title and profession.

This matter had become acute when in 1929, in the State of New York, laws were passed which threatened to make the profession of the engineer to a large extent inferior to that of the legally recognized architect.

It was at that date that a campaign was undertaken by the New York State Society of Professional Engineers which finally attained the result that now in the State of New York the title and activities of the engineer are just as well protected as those of the architect, the lawyer and the physician.

At the present time in the State of New York, the holder of an engineering degree, even when given by a recognized Technical School, College or University, has no right to carry out engineering work independently, either to make the impression by using the title of engineer that he has the right to do so. Only a definite number of years of practical experience, a state examination and an undisputable character can give him this right.

In 1935 similar legislation was in force in 35 States of the Union affecting more than 90% (more than 48,000) of the engineers. To a certain extent the licenses of the different States are reciprocally recognized.

Legal procedure which has resulted from these laws has demonstrated that the legislatures see to it that they are strictly adhered to. Consequently, an unlicensed person was punished with imprisonment for using the words "Civil Engineer" on his letterhead; the Supreme Court of Tennessee prohibited the use of the name "The Standard Engineering Company" as none of the members of this firm was licensed.

Against the evident advantages attained by legal protection of the engineer appears the possibility of non-extension of license But, without doubt, for the public these measures contain a definite protection.

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Is there cause for us Netherland engineers to be envious of the state of affairs as sketched above? The quality of our intermediate and higher education in my opinion makes a supplementary state examination superfluous. However, practical experience enters through the doors of the official bureau only with difficulty and this makes the demand for practical experience commendable. However, regardless of the amount of protection by which the profession and the title of the engineer may be covered, in his own interest as well as that of society, what good will ensue as long as it is not prescribed that certain types of engineering work shall be carried out with a qualified person in charge?

(Signed) DR. IR.* H. C. OLIVIER.

*(Note: "Ir." or "Ingenieur" is the established prefix designation for professional engineers in Holland.)

ENGINEER C. FREDERICK VAN LEEUWEN WEILAND.

* * *

From F. W. Dodge Corporation,
119 W. 40th St.,
New York City, N. Y.

Construction work started in February showed a total about one-third greater than was reported in February, 1936, according to figures from F. W. Dodge Corporation. Reporting on the February results this agency indicated a total of $188,590,800 for February in the 37 Eastern States as compared with $140,419,100 for February of last year and $242,844,000 for January of this year. For the initial two months of 1937 the figure amounted to $431,434,800 a gain of about 22 per cent over the corresponding two-month total of $355,211,900 for 1936.

Public Works and Utilities started during the first two months of 1937 in the 37 Eastern States totaled $128,079,200 as against $133,506,200 for the corresponding two months of 1936; the decline from last year in this division of the construction industry is entirely due to the slowing-up of the PWA program.

## Bulletin from the Secretary

The District of Columbia Society of Professional Engineers repaid to N.S.P.E. the loan of $30.00 made in December, 1936, for the purpose of conducting a membership campaign. The membership campaign was an outstanding success and the spirit of cooperation evidenced by the officers of the D.C.S.P.E. in their action is indeed commendable and greatly appreciated. The increase in membership of N.S.P.E. during the months of January and February, if continued through March, at the same monthly rate; will indeed furnish food for thought for those who maintain their selfish isolation.

Watch for the membership report in the May issue.

* * *

Engineer Fred C. Lohmann, 509 West Charles Street, Champaign, Illinois, has been delegated as a Director of N.S.P.E. by and for the Illinois Society of Professional Engineers, replacing Engineer H. E. Babbitt, who has resigned as Director.

* * *

Engineer R. H. Knipping, Secretary of the Texas Society of Professional Engineers has resigned as Secretary as of March 1, 1937, because of his acceptance of a position in Louisiana. Engineer R. S. Guinn who is also Treasurer of the Society has been appointed by President Tuttle to fill the vacancy until the Board of Directors select a successor. Engineer Knipping has done an excellent job in Texas and will be missed by his many friends and associates. All communications for Texas Society should now be addressed to Engineer R. S. Guinn, Secretary-Treasurer, 602 West 16th Street, Austin, Texas.

WILLARD S. CONLON,
Executive Secretary.

## California Doings

The following is taken "body and soul" from *The Registered Civil Engineer* for January 1937. This pamphlet is published for the information of the public, Registered Civil Engineers, and Licensed Land Surveyors of California by the State Board of Registration for Civil Engineers.

## Disciplinary Board Action

*By Henry D. Dewell*

In *The Registered Civil Engineer* of October, 1935, the writer under the title of "Unconventional Engineering," discussed disciplinary action taken as a result of an investigation of the sworn statements, regarding technical training and experience, made by applicants for registration.

It was pointed out that *something over 100* cases had been found in which the applicants' *statements were questionable. All of these applicants were registered* under section 10 of the Registration Act—the so-called *"grandfather's clause."*

Those men found to have questionable records were summoned informally before the board and confronted with the inconsistencies between their sworn statements and the facts as found by the board. As a result of that review and as reported in the April, 1935, issue, 23 certificates were revoked, 11 suspended and 19 corrected by additional affidavits. In addition, one registrant was reprimanded and 9 renewal fees were refused. In all of the cases resulting in suspension or revocation of certificates, with the exception of one man who demanded a formal trial, the evidence was so conclusive that each defendant willingly signed a waiver of a formal hearing and agreed to accept the ruling of the board. The present article reports and discusses the results of continued disciplinary board action.

Section 12 of the Civil Engineers' Registration Law provides that "The board shall have power * * * to make findings and * * * to remove * * * or to suspend * * * or to revoke the certificate of any civil engineer registered hereunder who has been convicted of a felony, or who has not a good character, or who has been found guilty by the board of any deceit, misrepresentation, violation of contract, fraud or gross incompetency in his practice or guilty of any fraud or deceit in obtaining his certificate or violation of any provisions of this act."

From time to time the board receives complaints of improper practice on the part of some of its registrants. These complaints vary from charges of unethical practice to those involving breach of contract, misrepresentation, fraud and deceit, and come from laymen as well as engineers. Each complaint is investigated and all pertinent evidence available is secured and filed pending review by the board and decision as to further action.

Obviously, it is a serious matter to bring before the board a civil engineer and charge him with unethical or dishonest practice. There always exists the danger that a complaint may have been actuated by a personal grievance. On the other hand, both the public and the profession have the right to be protected from those who, through deceit, gained the right to registration as civil engineers, and those civil engineers who, though competent, engage in improper and dishonest practice. The Board of Registration for Civil Engineers would be guilty of neglect of duty did it not act in accordance with the provisions of the law to afford such protection.

In all the cases that have come to its attention, the board has proceeded very cautiously. It has not issued a formal complaint unless the evidence of deceit in securing registration, or malpractice, appeared to be conclusive and sufficient to successfully withstand attack in a court action. No publicity has been given to the summons of registrants for informal discussion before the board. In the case of summons for formal hearing the press has been notified of such hearings, although no actual publicity has resulted until the decision of the board has been handed down. In this practice, the board departs from that of the Medical Board, which releases notices of hearings to be held together with the charges and the names of the defendants.

During the week of September 27, 1936, the board met in three formal sessions in Los Angeles to hear evidence in cases of some of its registrants. These registrants were charged with deceit in securing registration, breach of contract and improper and dishonest practice, respectively. As a result of the evidence presented, the board revoked the certificates of a number of registered civil engineers. One man was found guilty of false statements made in his application for registration. This man, without formal technical education, had not only made statements under oath that he had been in responsible charge of the preparation of plans and specifications for several large buildings, but had reiterated these statements in subsequent letters to the board. Investigation by the board and evidence presented in the formal hearing showed that he was a contractor without engineering training and experience who, in the connection with the promotion of the various projects, had furnished some preliminary cost estimates but had had nothing further to do with the actual plans and specifications.

Another man, a technical graduate from a large university, was found guilty of breach of contract. As is customary in such cases, his application for registration was reviewed. In this application the statement had been made that in a period of three years shortly after graduation he had served a large railway system in the capacity of chief draftsman, assistant chief engineer, superintendent of construction, location engineer and division engineer. These statements were deemed worthy of investigation for it is not often that such responsibilities come to a young engineer. The investigation indicated that the man had served this railroad only in a minor position.

## Engineers Are Told Big Navy Is Necessary

Asserting that the master minds of diplomacy are making it virtually impossible for any nation to remain strictly neutral when an important war is raging, Lieut. Commander John L. Hodges, U.S.N.R., addressed the regular meeting of the Professional Engineers Club of Hudson County, recently.

"Our only hope of accomplishment toward universal peace lies in a change in the minds of men," he said. "Until the existing condition of mistrust among nations disappears, we must accept the way pointed out by Washington, in 1790, who stated that to be prepared for war is one of the most effective means for preserving peace.

"The National Defense Act, in addition to provision for the regular army and reserves, provides for a navy, second to none," Lieut. Commander Hodges said.

"The Navy is the first line of defense. Its power lies in combatant ships, auxiliaries and naval bases. In accordance with a far-sighted program, first class men-of-war are being built, merchant marine construction is being undertaken under the supervision of the Navy Department with the purpose of allowing for quick conversion into auxiliaries and naval bases are being strengthened and established in both Atlantic and Pacific waters."—*From the Hoboken, N. J., Jersey Observer.*

### FLOODS AND SOIL CONSERVATION

*(Continued from page 13)*

conservation program for erosion control and waterflow retardation as an aid to flood control. The very attitude of the editors of this publication in desiring an article on soil conservation and flood control shows that engineers are fully cognizant of the need for mutual effort. Already land use experts and downstream engineers are actually cooperating. With the backing of the American people, these technicians should eventually erase from this country for all time the problem of tremendous, uncontrolled floods.

# PROFESSIONAL DIRECTORY

**F. HERBERT SNOW**
Consulting Engineer
Telegraph Bldg. Harrisburg, Penna.

**Robert Hall Craig**
Consulting Engineer
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Design » Finance
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HARRISBURG, PENNSYLVANIA

## EMPLOYMENT SECTION

**We have had a request from Engineer William Stack, of Park Ridge, Illinois, to initiate an "Employment Section." These are days of "cut and try" so we are placing this first "Want Ad" as an experiment. We hope it will bring him good fortune.**

**POSITION WANTED**

REGISTERED ENGINEER (Wisconsin, Connecticut); Registered Land Surveyor (Florida); Member N.S.P.E. desires position design, construction paving, water-supply, sewerage. All types surveys, reports, some promotional ability. Own instruments. 14 years experience. Address—W.S., 400 Grant Place, Park Ridge, Illinois.

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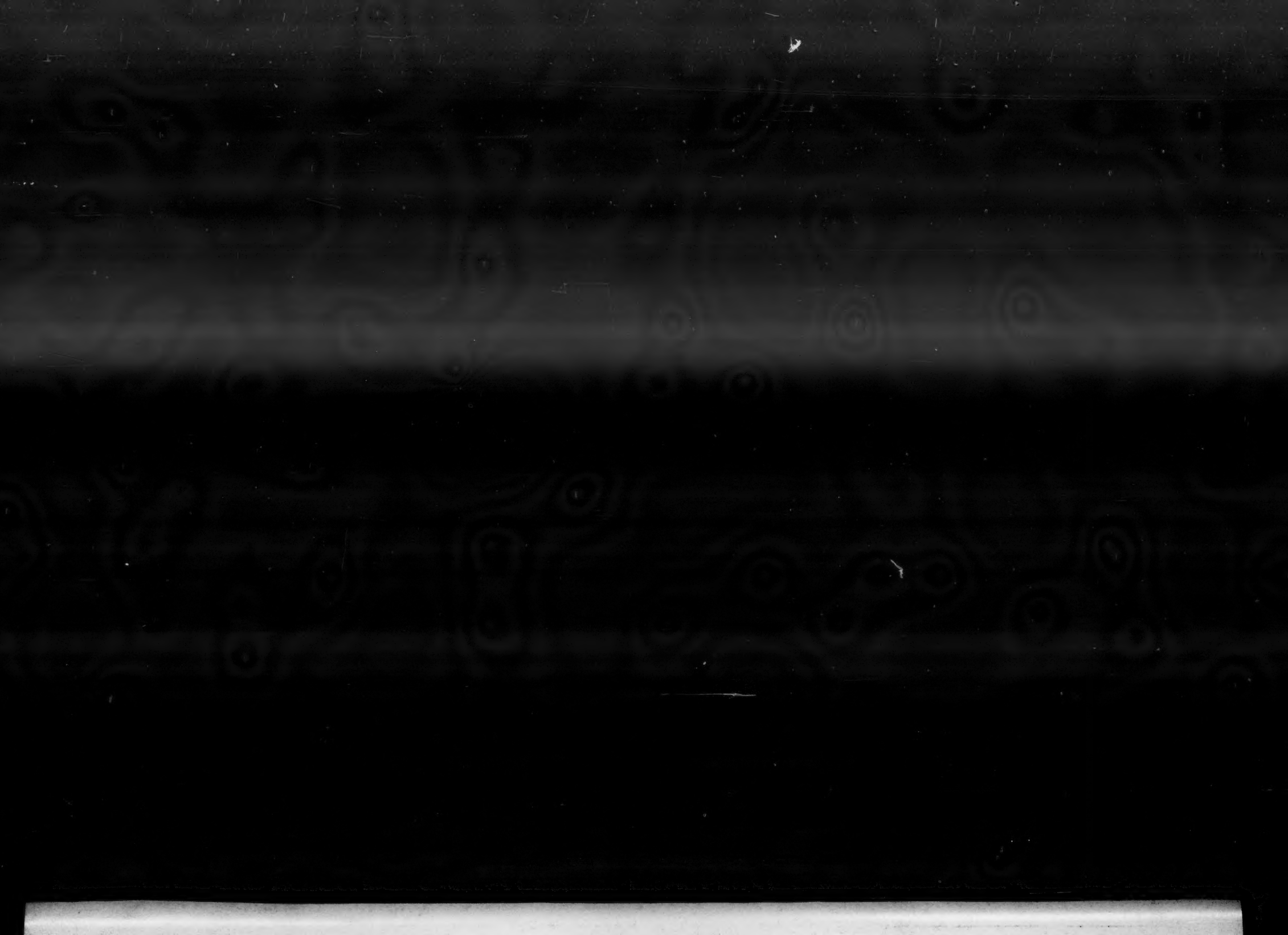
17 E. Main Street Waynesboro, Pa.

"Save the Structure" may well be the slogan of bridge engineers who, in 1937, are faced with the necessity of doing something about rapidly increasing live loads, great increases in traffic, and deteriorated roadway surfaces.

There is a direct solution in the use of Alcoa Aluminum to replace needlessly heavy floors and floor systems, railings and walk-ways.

Dead-load reduction with Alcoa Aluminum can add years of useful and safe service to thousands of existing bridge structures. Here are four things that may be accomplished: 1. Traffic capacity increased; 2. Permissible live load increased; 3. Roadway surface improved; 4. Stresses reduced.

Saving the structure with Alcoa Aluminum is good engineering, as several successful reconstruction jobs have proved. And it is good economics to avoid expensive new construction by a relatively small investment in sound improvement.

May we discuss the engineering considerations with you? ALUMINUM COMPANY OF AMERICA, 2112 Gulf Building, Pittsburgh, Pennsylvania.

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